

HERMAN NELSON  
*Invisible Radiators*

"Immured" Type  
and  
"Paneled" Type

*For the  
Architect & Engineer*







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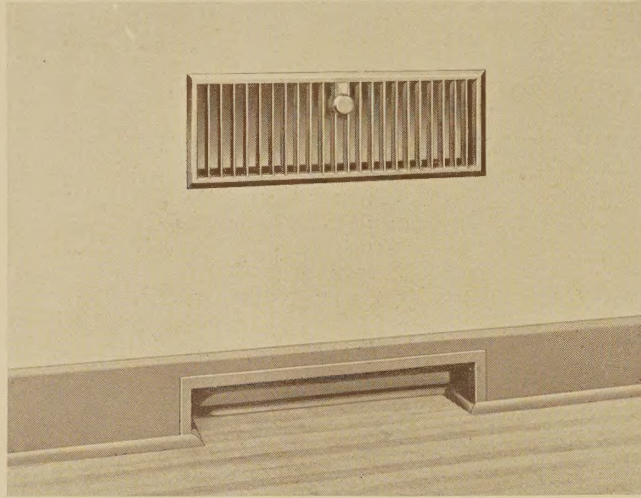
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**HERMAN NELSON INVISIBLE RADIATORS**

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*The "Immured" Type*

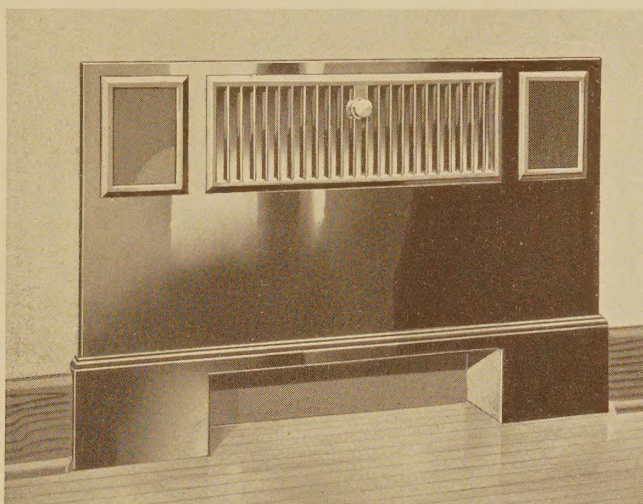
This type is completely sealed within the wall of the room, permitting the plaster, tile or other wall finish to be run continuously across the front of the radiator.

Control of heat delivery is accomplished to the finest degree by operating the damper.

To attempt provisions for valve control at the radiator with this type is considered impractical and not good engineering. Therefore, this type is recommended for residences, or other buildings, where cut off or automatic control valves and traps may be installed on the pipe branches in the basement, or below the room in which the radiator is installed.

For fine residences and similar buildings, where the ultimate in appearance is desired, the "Immured" type Herman Nelson Invisible Radiator has been accepted and approved as the "last word".





*The "Paneled" Type*

With this type the heat delivery to the room may also be controlled by hand operation of the damper. In addition, the steam or water circulation may be controlled at the radiator by a hand or automatic control valve.

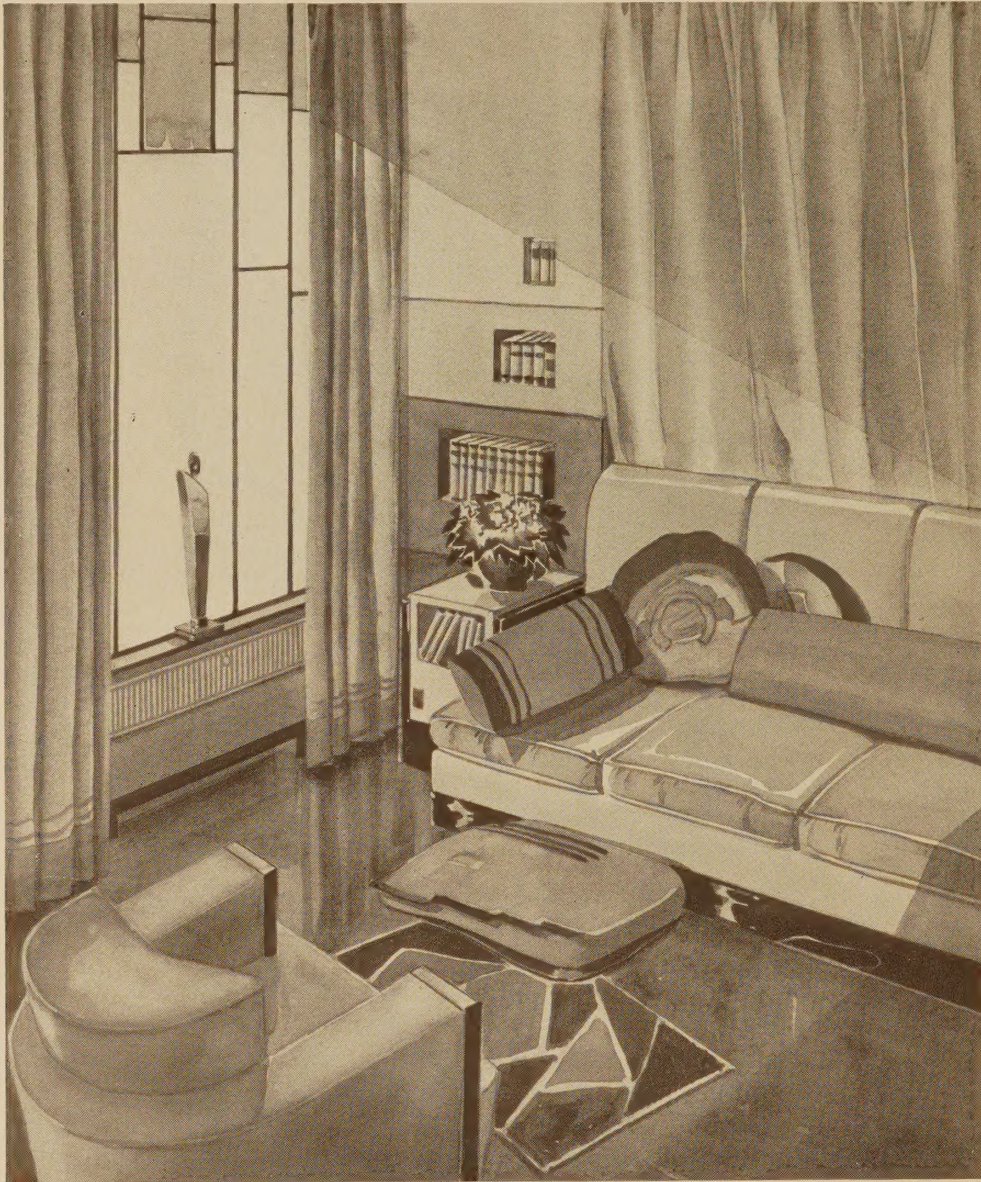
The radiator valve may be operated by reaching through the small panels shown at each end. The entire front is instantly removable, without the use of tools of any kind, giving complete access to valves, traps and connections.

This type is recommended for multi-story buildings such as offices, hotels, apartments, etc., where it is impractical to run separate pipe risers, and, in which event, valves and traps should be installed at each radiator where they will be conveniently accessible.

The quality of materials used and the workmanship are identical with that of the "Im-mured" type shown on opposite page.

This radiator occupies no space on the floor or in the room.



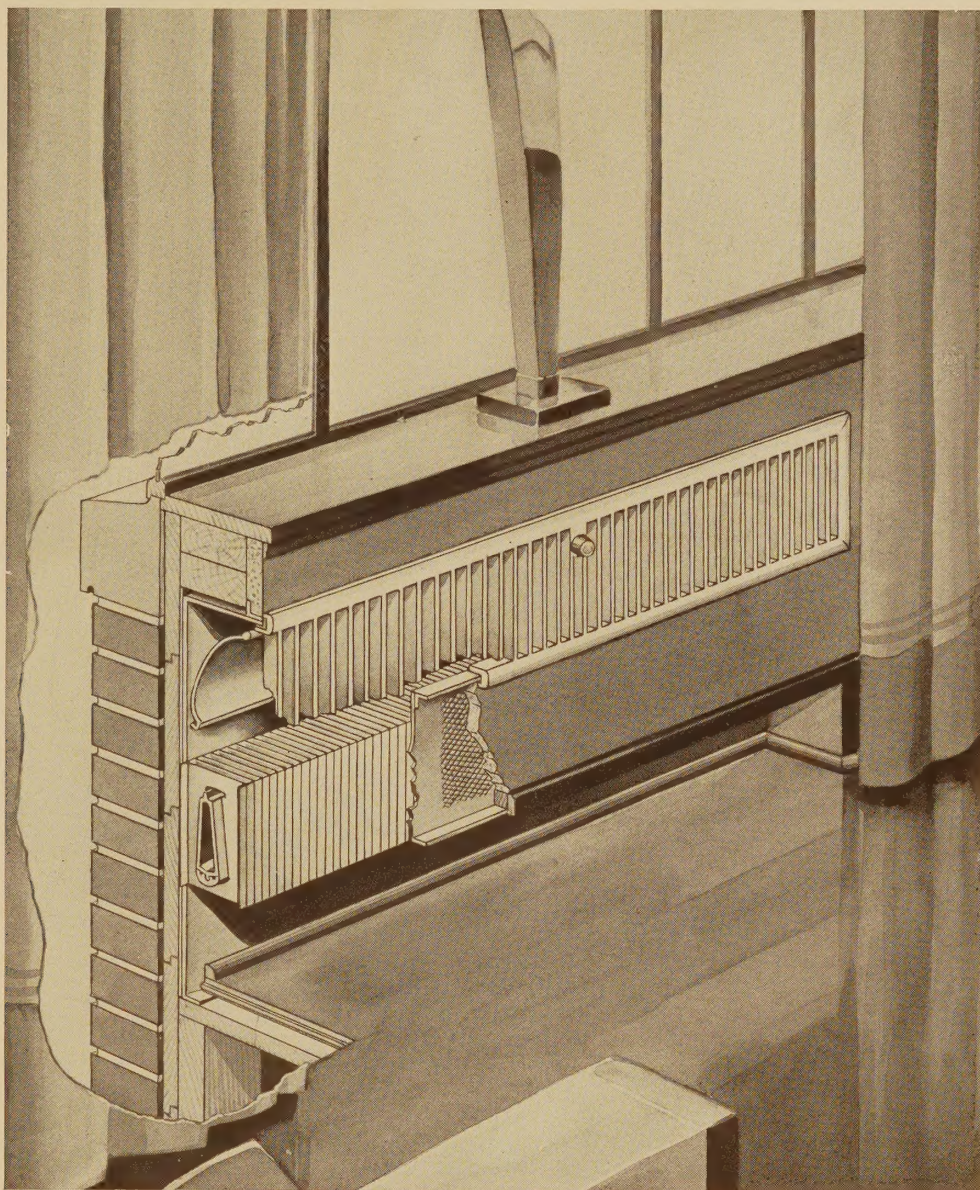


**B**EHIND that grille in the wall, under the window, the Herman Nelson "Immured" type Invisible Radiator says this living room is modern.

The lady of the house and her interior decorator have enjoyed full scope in the furniture and furnishing arrangements.

Not an inch of floor or room space is wasted and it was not necessary for the architect to thicken the wall, or provide special building construction.





THIS picture shows how the "Immured" type Herman Nelson Invisible Radiator was installed in the living room shown on opposite page.

The heating element, enclosed in a scientifically designed cabinet with heat outlet grille, was furnished complete by the manufacturer and installed by the heating contractor as easily as he could have installed an ordinary radiator, set exposed in the room.

Then the metal lath and plaster were applied over the entire front of the cabinet, leaving only the grille exposed to view.





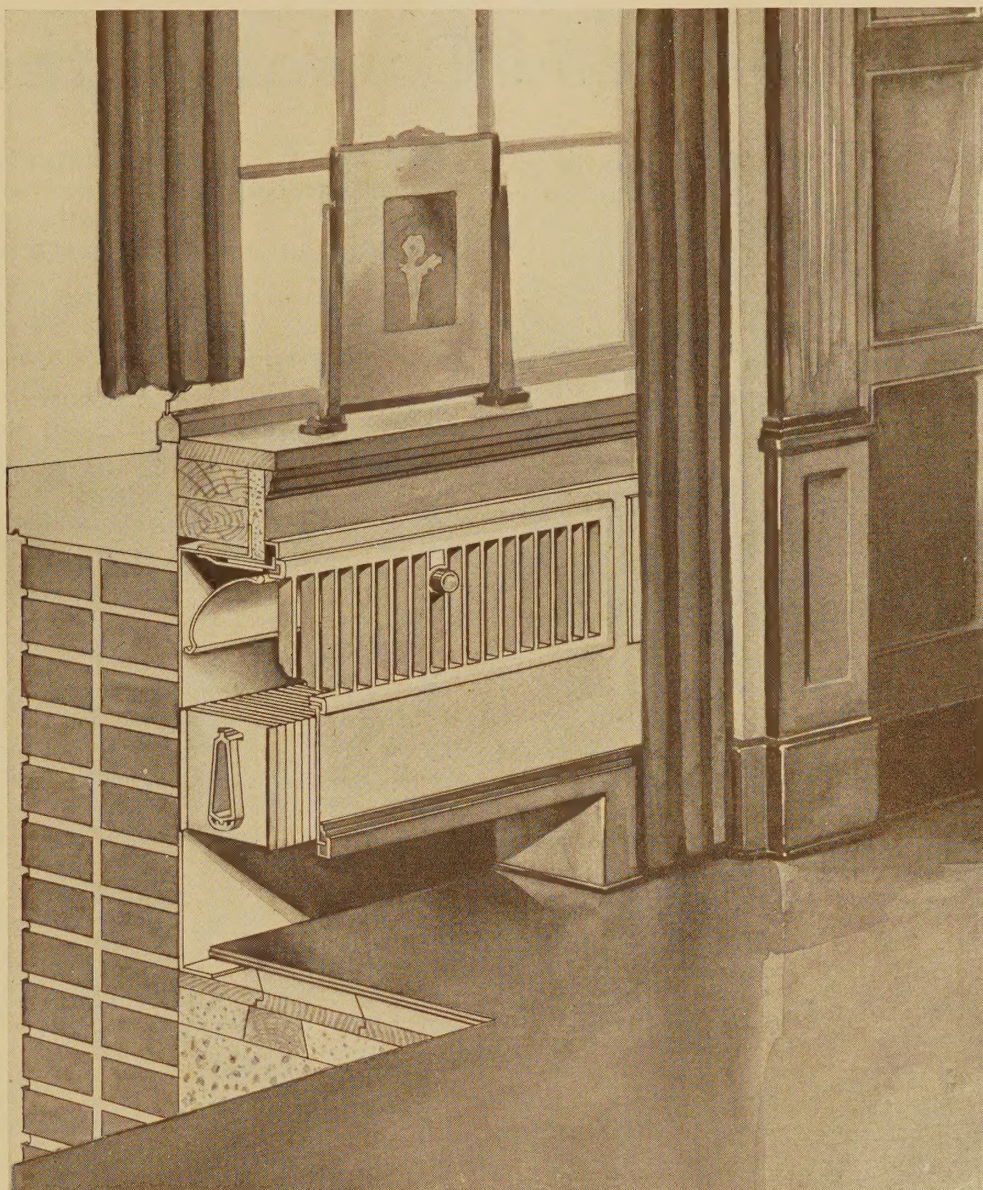
**B**EHIND those grilles, in the wall, under the windows, there are two Herman Nelson Invisible Radiators of the "Paneled" type, that say, without question—"this is a modern office". Note the atmosphere of efficiency and cleanliness.

The heat delivery may be regulated to the finest degree by operating the dampers. The steam or hot water supply to the heating element may be controlled by reaching into the cabinet to operate the radiator valve.

The front of the radiator is instantly removable, without the use of tools of any kind, for access to the controlling valves, traps and connections.

Not an inch of floor or room space is wasted. A radiator arrangement that is a true solution to many of the architects' and engineers' problems.





THE above picture shows how the "Paneled" type Herman Nelson Invisible Radiators were installed in the office illustrated on opposite page.

A recess was left in the wall by the masonry contractor, in which the heating contractor set the radiator, as furnished complete by the manufacturer.

Piping and valve connections were then made and, when plastering was finished around the cabinet, the front panel was slipped into place. Then the decorators finished the panel to harmonize with the room.

No furring of walls—no special construction—the steamfitters' task made easy.



# Operation and Control of the—



*Damper control*

## *Both Types Operate Alike*

As previously shown, Herman Nelson Invisible Radiators are built in "Immured" and "Paneled" types. Both types operate in exactly the same way.

## *Simplicity of Operation*

When a fire is started in a fire-place, the warm air rushes up the chimney, due to the draught created by the fire or heat. Invisible radiators operate on the same principal except that the warm air enters the room where it is needed.

The steel case or cabinet acts like a chimney while the heating element furnishes the heat required to produce the flow of air. As the air in the cabinet is warmed by the heating element, it flows upward and out into the room through the outlet grille. At the same time air from the room flows around the heating element to replace the air that has previously been warmed. In this way air from the floor is continuously drawn into the cabinet, warmed and discharged back into the room. The accompanying sketch will serve to illustrate the operation of Herman Nelson Invisible Radiators.

There are no moving parts and there is nothing to get out of order.

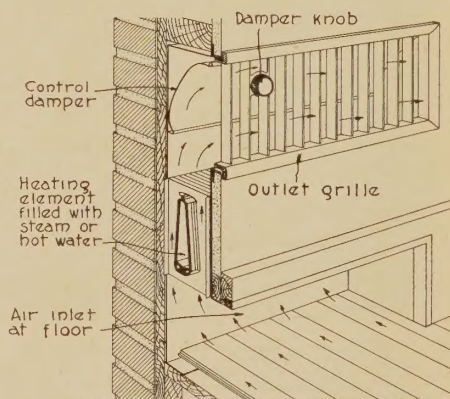
## *Heat Supplied by Steam or Hot Water*

Herman Nelson Invisible Radiators may be used with any type of steam, hot water, vapor or vacuum system of heating (see page 33).

The steam or hot water is circulated through the single large opening in the cast aluminum core of the heating element, as shown below. The heat from the steam or hot water flows through the walls of the core and out through the fins, which in turn warm the air passing around them.

## *Damper Control*

As explained above, all the heat from the Invisible Radiator is delivered into the room by the air that flows through the radiator. Obviously the simplest way to control the amount



*How they operate*

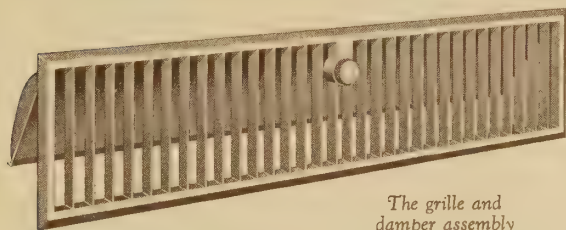
of heat delivered into the room is by regulating the flow of air. This is easily accomplished by means of a light weight heat control damper.

By varying the position of this damper the amount of heat supplied to the room may be



# Herman Nelson Invisible Radiators

varied from the maximum output with the damper wide open to a very small amount when the damper is tightly closed. When the damper is closed the heating element remains hot but virtually no heat is given off because the flow of air has been stopped.



*The grille and damper assembly*

The light weight damper is operated by means of the control knob shown in the middle of the grille, illustrated above. The damper may be adjusted to any position by the turn of the knob. The operating mechanism is so designed that the damper will be securely held in any position in which it is left. No amount of jarring can cause the damper to move.

The damper is light but sturdy and the control knob arrangement is so efficient that the damper may be easily adjusted by a turn of the knob.

## *Advantages of Damper Control*

The advantages of damper control are many. It is simple, sturdy, easily understood, the setting can be seen at a glance and the response to any change in the damper setting is almost instantaneous. For example, if the damper is closed and heating is desired, the warm air starts flowing into the room as soon as the damper is opened, because the heating element is always warm when steam or hot water is circulating. In a like manner the amount of heat may be reduced very quickly by partially or fully closing the damper.

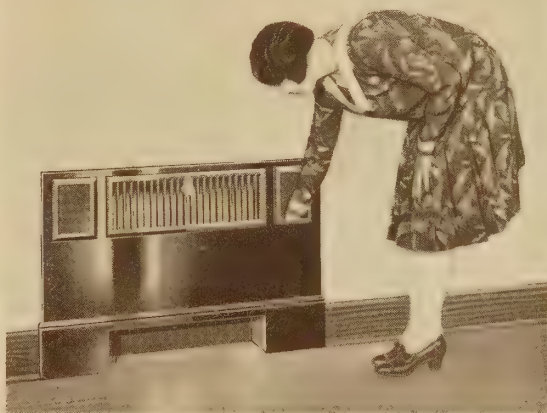
## *Valve Control*

In the case of the "Paneled" type Invisible Radiator, a hand-operated valve may be used to control the amount of heat when desired. The valve is easily accessible through the hand access doors provided at each end of the grille as shown in the illustration below. These doors open at the bottom by a slight touch of the hand and are self-closing when the hand is withdrawn.

When automatic temperature control is used with the "Paneled" type the diaphragm valve should be installed directly on the heating element inside the cabinet (see pages 37 and 38). Under these conditions the control damper may be omitted if desired.

## *Panel Easily Removed Without Tools*

The access doors are also used to unfasten the spring hooks that hold the panels securely in place (see pages 12 and 13). When the hooks have been released the whole front panel can be easily removed by grasping the panel by the hand hole frames. In this way the entire cabinet is open for access to all parts. No tools are required.



*Valve control*



# Design and Construction of the—

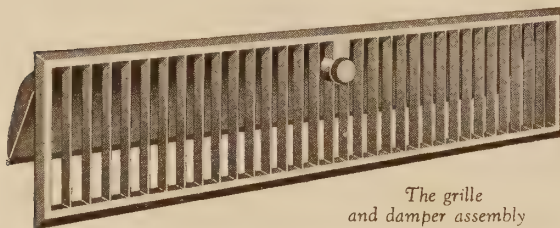
(Patents Pending)

## General Arrangement of Both Types—

Both types of Invisible Radiators consist of a steel cabinet in which the heating element is mounted. An air inlet opening is provided at the base of the cabinet and a warm air outlet with grille is furnished above the heating element.

The operation of all Invisible Radiators depends entirely upon the chimney action caused by the heating element, with the cabinet acting as a flue. This action is always positive, but any slight change in the shape or dimensions of the cabinet, heating element, grille, or air inlet opening will materially affect the capacity of the complete unit. For these reasons, this Company maintains the policy of furnishing the complete Invisible Radiator, in order that capacities, as given on pages 20 to 29, may be guaranteed.

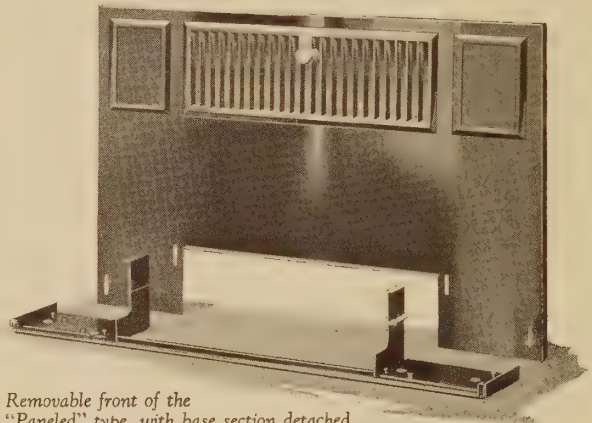
To furnish the heating element only, to be placed in a hole in the wall or to be haphazardly encased by others is neither good engineering nor good salesmanship. Therefore, only in special cases, where there is no other alternative and the Company's good will is not jeopardized by such procedure will we fill orders for Invisible Radiator heating elements only.



The grille and damper assembly



Cabinet and heating element of the "Immured" type as shipped from the factory



Removable front of the "Paneled" type, with base section detached

**Cabinets**—The cabinets furnished with both types are built of 16-gauge steel with welded and riveted joints. The entire back, top, bottom and sides are made in one piece, thus reducing the number of joints to a minimum. The "Immured" type has a wood nailing strip approximately  $3/4'' \times 1-1/2''$  extending the full length of the inlet opening above said opening, as



Cabinet and heating element of the "Paneled" type as shipped from the factory

shown in illustration to the left. It is intended that the baseboard be nailed to this strip. See pages 20 to 25. When the radiator is installed behind a tile wall, this strip should be removed on the job as shown on page 30. On special order, a second nailing strip will be provided immediately under the outlet grille frame.

The "Immured" type cabinets are provided with metal lath ties made of soft annealed gal-



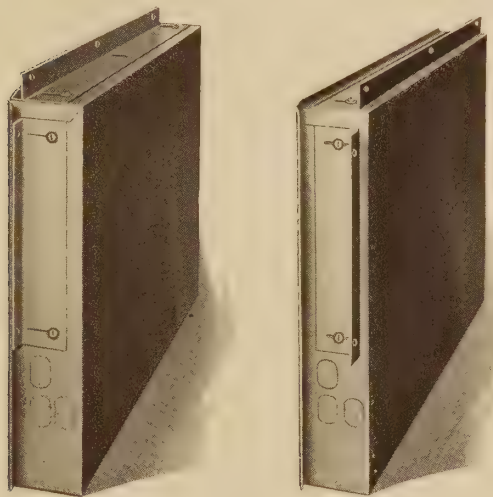
# Herman Nelson Invisible Radiators

vanized iron wire on both front and rear of the cabinet for use in fastening the metal lath to the cabinet. Holes for additional ties are also provided along the sides of this cabinet.

No access is required to the Wedge Core Heating Element in Herman Nelson Invisible Radiators. Therefore, it is built into the cabinet of the "Immured" type at the factory as shown in the illustration on the opposite page. The "Paneled" type cabinet is built with a removable front to provide access to traps and valves as shown in the illustrations.

The same high quality of material and workmanship is employed in the manufacture of both cabinets.

**Nailing Angles:** The top flange of the "Immured" type cabinet is in the form of an



Cabinet of the "Paneled" type showing piping knockouts. Adjustable angles are also shown in standard and reversed positions

angle and is provided with nail holes for fastening to building construction, see pages 20 to 25. Nail holes are also provided in the base of the cabinet. The "Paneled" type cabinets are provided with adjustable nailing angles on top and both sides. These may be moved backward or forward to meet practically any thickness of wall finish. As shown in the illustrations, they may even be reversed in position in order to provide a maximum distance of 5-3/4" to conform with glazed tile or similar construction. Nail holes are provided in all nailing angles and in the bottom of the cabinet as shown. The method of adjusting these angles for different wall finishes is shown on page 31.

**Piping Knockouts:** No knockouts for pipes are required in the "Immured" type cabi-

net as the pipe connections are made outside of the cabinet. On the "Paneled" type three knockouts are provided in each end, as shown in the illustrations to permit the piping to be installed under all conditions. These knockouts are of ample size for any piping that may be used and have been very carefully located. They are easily knocked out by a light blow with a hammer. See pages 37-38.

**"Paneled" Type Removable Front** The front of the "Paneled" radiator may be instantly removed or replaced without the use of tools of any kind. The cabinet has a groove along the sides and top into which a tongue, on the front panel, is inserted. This tongue and groove or telescopic arrangement is unique and in addition to other of its good features, provides a tight, dust-proof joint without the use of gaskets. This joint is clearly shown in illustrations on pages 10, 12 and 13 and in drawing on page 31.

The paneled front is made of 16 gauge furniture steel with edges turned over and all outside corners welded and ground smooth. It is thoroughly braced around all openings, making it very rigid with very little increase in weight.

After the panel has been slipped or telescoped into place, it is held firmly by two spring hooks mounted on the back side of the panel and arranged to be attached to the inside of the cabinet, as shown on pages 12 and 13. These hooks and the tongue and groove joint between the cabinet and the front panel make any further fastening unnecessary.

The fact that no screws or bolts are needed to hold the panel in place is another of the many good features of this radiator.

**Mounting of Heating Element:** The heating element used in both types is the Herman Nelson Wedge Core Radiator described on pages 14 and 15. With the "Immured" type it is built into the cabinet at the factory as shown on page 10. It need not and should not be removed at any time.

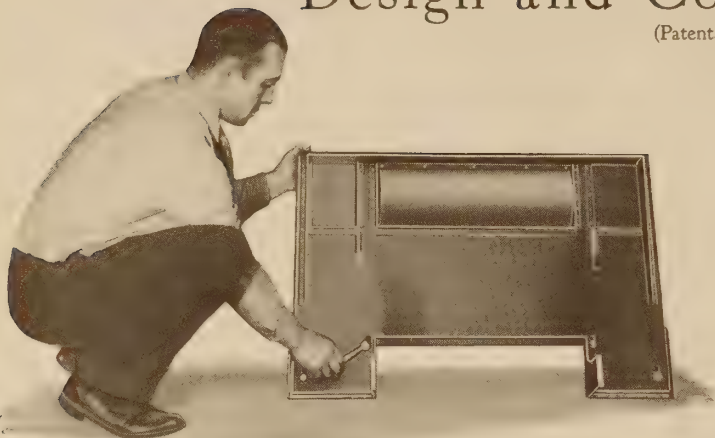
With the "Paneled" type, two heavy steel radiator hangers are fastened to the back of the cabinet as shown on pages 10 and 36. They are properly spaced to hold the radiator and to keep it from moving in any direction. These hangers are provided with slots at an angle of approximately 45° from vertical. This arrangement automatically spaces the radiator and prevents it from being improperly located in the cabinet.

**Protection of Heating Element:** A sheet of steel is placed in the grille opening of the



# Design and Construction of the—

(Patents Pending)



Method of tightening adjustable base of the "Paneled" type. (Rear view of panel)

"Immured" type for the purpose of protecting the heating element from plaster and debris during installation in the building. See pages 10 and 35. This protecting shield should not be removed until the plastering has been finished and the grille is being installed.

A light weight steel protector is placed on top of the heating element of the "Paneled" type before shipment as shown on pages 10 and 37. This is placed there for the purpose of protecting the heating element from dirt, plaster, etc., during building construction, and should not be removed until the plastering and decorating is completed and the front panel is about to be installed.

**Hand Access Doors:** On the "Paneled" type Invisible Radiator, access doors are provided at both the right and left hand sides of the grille for hand access to the radiator valves and to the spring hooks for fastening the front panel to the cabinet. Both of these access doors are provided with frames to match the grille frames. They are hinged at the top so that they will swing out of the way easily when the hand is inserted. They are self-closing when the hand is withdrawn.

**Adjustable Base:** With the "Paneled" type an adjustable base is provided. The adjustment provides for flexibility and ease in installation. The base may be adjusted up or down to meet varying distances from the bottom of the cabinet to the top of the finished floor of from  $1/4''$  to  $1-1/2''$ . See page 32. This adjustment is accomplished by fastening the base to the panel with bolts which fit into slotted holes. When the proper position of the base section is determined for each individual radiator, the base is securely locked in place by merely tightening the nuts, as shown in the illustration above.

With the "Paneled" type the air inlet open-

ing to the radiator is provided in the base section. The sides of the adjustable base extend back to the rear of the cabinet to form the opening for the inlet of air to the heating element as shown on page 31.

**Grille Frames and Plaster Grounds:** With the "Immured" type, the grille frame into which the heat outlet grille fits, is made of angle iron with the corners welded, making a one-piece frame. See illustration on page 10 and drawing on page 30. These frames are fastened to the cabinet at the factory. Unless otherwise ordered, all radiators are shipped with a  $3/4''$  angle frame. That is, the outside edge of the frame is  $3/4''$  from the front of the cabinet. The outer edge of the frame is arranged to be used as a plaster ground.

Upon special order, grille frames extending any specified distance from the front of the cabinet will be furnished. In addition to the standard  $3/4''$  frame,  $1-1/2''$  frames for use with tile wall construction are carried in stock. Frames with any other dimension are made to order.

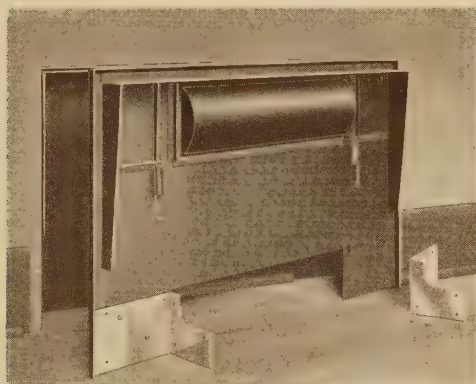
This arrangement is not necessary with the "Paneled" type as the grille and frame are a part of the panel construction.

**Cast Grilles:** All grilles, for both types of Invisible Radiators, are cast of a non-ferrous alloy. They are light, strong and present a very pleasing appearance. They are made in six (6) designs as shown on pages 16 and 17. In all cases they are securely held in place by set screws in the bottom frame and hardened steel pins in the upper frame, making them very easy to remove when required for cleaning or other purposes. The selection of grilles, is optional with the purchaser but unless another selection has been specified or ordered, all Invisible Radiators will be furnished with "Standard" grilles, as shown at top of page 16. This Company does not make grilles to order and if the purchaser wishes a design not shown on pages 16 and 17 it will have to be procured from other manufacturers. In this event, page 30 may be referred to for dimensions to which such grilles will have to be made. It is advisable for this Company to furnish the grille manufacturer with dampers and knobs to be made part of the special grilles, provided damper control is required. The dampers furnished with Herman Nelson Invisible Radiators cannot be attached to the cabinet or panel but must be a part of the grille.

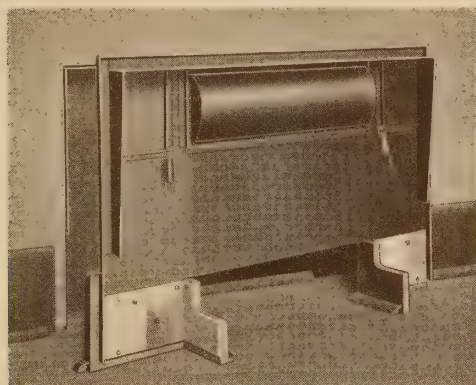
**Dampers:** The dampers are light in weight, made in one piece, and hinged to the back of the grille. See page 10. Where the grilles are required without dampers as might be the case where automatic temperature regulation is employed, they will be so furnished. All



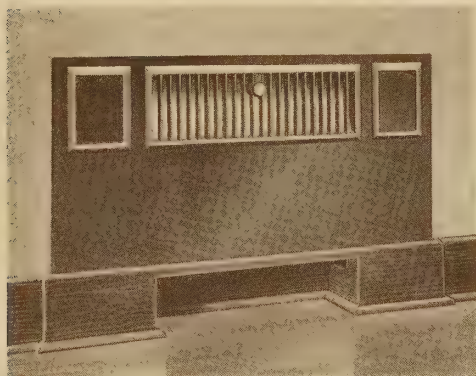
# Herman Nelson Invisible Radiators (Cont'd)



Supporting angles are provided for fastening wood base to the removable front of the "Paneled" type  
(Panel has been turned around to show construction)



Method of attaching wood base  
(Panel has been turned around to show construction)



The finished installation with wood base across the removable front

dampers are so designed that they form a smooth air deflector behind the grille, when in full open position.

**Control Knobs:** All grilles are arranged to be controlled by operating a neat knob mounted on the face of the grille. See page 8. This knob operates the damper from a fully closed to a fully open position. The damper may be held in any position desired without danger of being jarred out of position.

**Wood Base:** As previously stated, the "Paneled" type Invisible Radiator is furnished with an adjustable steel base. On some occasions, it may be desirable to match the base on the front panel of the radiator with the design of the baseboard used in the room, in which event, the steel base regularly furnished can be omitted and attachments furnished to permit a wood base to be securely fastened to the panel, all as illustrated on this page and page 32. In such event, steel angle plates are furnished, as shown. These will be shipped separately and provided with machine bolts to permit them to be quickly fastened to the panel by the carpenter contractor. The wood baseboard can then be built to fit the cabinet, as shown. Screw holes are provided in the front panel and angles to permit the finished baseboard to be securely screwed in place. The quarter-round should be nailed or screwed to the wood base, as shown, in order that the complete front panel including its wood base may be readily removed or slipped in place. If it is found that the finished floor should settle slightly the quarter round may be moved down to fit snugly to the floor line.

**Painting:** All cabinets of the "Immured" and "Paneled" types are sprayed with a metallic aluminum paint after fabrication and before shipping. All grilles and damper assemblies for both types and the front panel of the "Paneled" type are painted with one coat of priming paint after fabrication and before shipping. These are intended to be decorated on the job by the decorating contractors to harmonize with the room finish.

**How Radiators Are Shipped:** In the case of both types the cabinets and heating elements are shipped together in one crate. The grilles and dampers for the "Immured" type are crated separately. With the "Paneled" type, the front panels, with grilles and adjustable bases, are shipped in separate crates.

It is advisable not to install the grilles on the "Immured" type until plastering has been finished and the heating job completed. The front panels for the "Paneled" type should not be permanently installed until the heating plant is completed and the decorators are ready to finish them.



# The Herman Nelson—

(PATENTED)

## *Its Development*

The Wedge Core Heating Element is the heart of the Herman Nelson Invisible Radiator and an outstanding achievement in the art of heating and ventilating. It is used in all Herman Nelson heating and ventilating products.

When The Herman Nelson Corporation engineers set out to build smaller, lighter and better heating equipment, the radiator constituted the greater problem. Cast iron was almost universally used for this purpose but its bulk demanded too much space, its rough surfaces fouled easily and despite its apparent ruggedness, it is brittle and easily damaged by frost—a serious weakness in many applications. Sheet steel radiators had proved to be unsuitable for the purpose.

The automotive industry suggested the use of non-ferrous metals but the design and construction employed was not practical **for use in the heating of buildings where the life of the heating equipment must be as long as that of the building.** Investigation led to the conclusion that soldered, brazed or welded joints would not withstand the heat of steam and continuous expansion and contraction strains—to say nothing of freezing. The congested waterways and multiplicity of passages characteristic of automotive radiators were liable to stoppage and would not permit proper venting which eventually caused leaks.

Careful study, with a background of many years' experience in the art of heating buildings, indicated that the proper solution lay in a non-ferrous radiator *especially designed for this service—not an adaptation from some other art.* This resulted in the Herman Nelson Wedge Core Heating Element involving a unique design and method of construction. It has many distinctive features and renders practical the use of an ideal material.

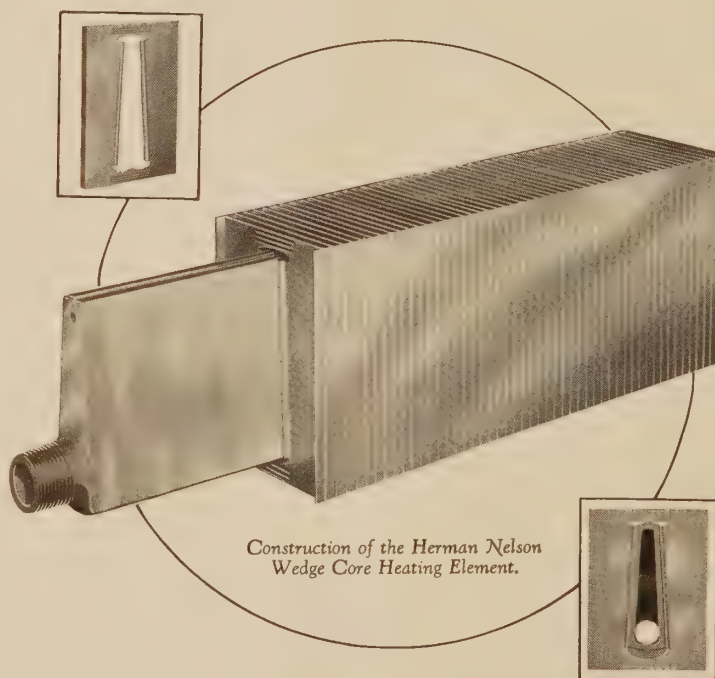
## **Construction**

The Herman Nelson Wedge Core Heating Element consists of a wedge shape fluid container or "core" on which a series of heat conductor plates are securely mounted. It is built entirely of aluminum which makes a light, practically non-corrosive, compact and effective heating element.

The core is a

straight one-piece die casting of an aluminum alloy which is unusually strong, dense and ductile and has a high heat absorbing capacity. The conductor plates are of pure sheet aluminum which has a higher heat transmission value per unit of weight than even cast aluminum or any other metal. Because of its light weight and high conductivity pure aluminum will transmit about twice as much heat per unit of weight than either copper or silver, six times as much as brass and twelve times as much as cast iron.

The exclusive design employed in the Herman



Construction of the Herman Nelson Wedge Core Heating Element.



# Wedge Core Heating Element

Nelson Wedge Core Section renders aluminum practical for radiators. It is ideal for the purpose but is not suitable for the types of construction used in other non-ferrous radiators because it cannot be commercially soldered, brazed or welded nor reliably cast except in simple forms and by special processes.

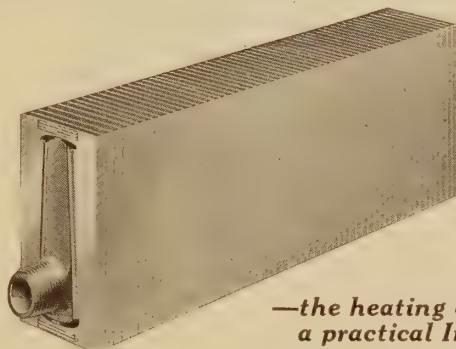
The "core" is provided with male threads at each end, for pipe connections. The outer surfaces are accurately machined. The plates are die stamped with inter-locking flanged apertures which fit the core and afford a contacting area many times greater than the conducting area. Aluminum possesses the characteristic of seizing other metals in contact with it and when the plates are pressed onto the core under heavy pressure and locked and inter-locked in position, a permanent efficient contact is obtained. The plates are also provided with inter-locking outer flanges which act as separators, strengthen the plates and give the heating element a very neat appearance.

## *Low Temperature Heating Surface*

In the operation, of the Wedge Core Heating Element, heat is absorbed from the steam or hot water, transmitted thru the plates and delivered to the air. This arrangement affords a very large amount of comparatively low temperature surface which is much better, for heating purposes, than the high temperature prime surface commonly used since it does not overheat or scorch the dust particles contained in the air.

## *Free Air Passage*

It is unnecessary for the air passing thru this heating element to continuously change its direction because the passages are straight and smooth. The air is quickly and uniformly heated by being split up into fine streams.



—the heating element that insured  
a practical Invisible Radiator

## *Clean and Sanitary*

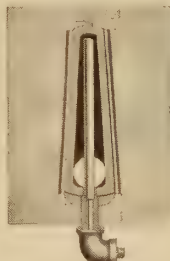
There is no place for dust or dirt to accumulate on the perfectly smooth, straight plates. From the standpoint of sanitation this is a very desirable feature.

## *Great Strength*

The heating element is so substantially built that it has frequently withstood pressures as high as 500 pounds per square inch after the plates had been applied. All cores are regularly tested at 300 pounds hydrostatic pressure before assembly. The method of mounting the plates adds strength to the core and provides a very large factor of safety even when operated at a pressure of 150 pounds per square inch.

## *Proved Record of Durability*

Before the Herman Nelson Invisible Radiator was offered to the public, the Wedge Core heating element was regularly employed in the Univent, which is used for heating and ventilating schools and similar buildings, under conditions where outdoor air as low as 40° below zero is blown thru the heating elements. Under these conditions it has served unflinchingly for years withstanding expansion, contraction and water hammer strains. Often, through neglect, it has been frozen but never damaged. Considering this record, The Herman Nelson Corporation does not hesitate to unconditionally guarantee this heating element against leaks, for the life of the radiator, to the extent of replacing, without charge to the purchaser, at any time, any Herman Nelson Wedge Core Heating Element found to be defective.

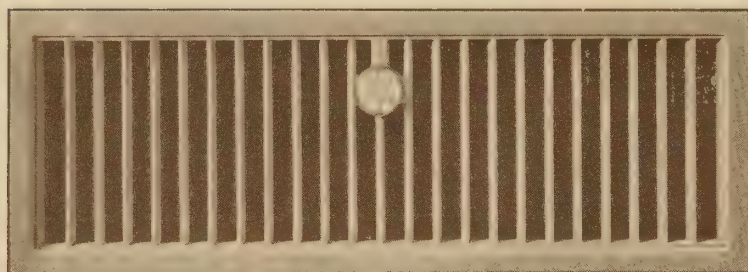


Air Vent for Hot  
Water Systems



## SELECTION OF GRILLES

(Design Patents Pending)



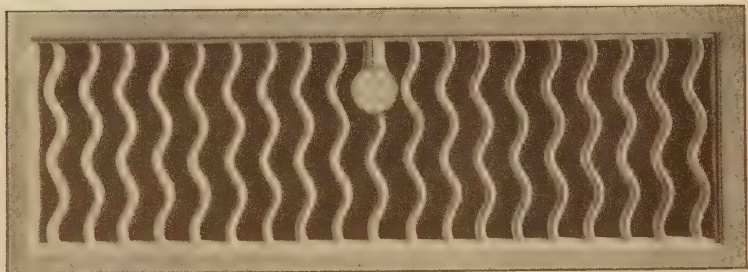
### “The Standard”

This grille will always be furnished unless another design is specifically ordered. Because of its straight forward simplicity, it does not strike a discordant note in any room decoration. Where a more sympathetic design is desired, one of the other grilles illustrated will meet almost any situation.



### “The Tracery”

The Gothic tendency of this design qualifies it for use in English and French Gothic interiors. However, it will also harmonize very nicely with interiors of the Spanish or Italian Renaissance periods.



### “The Wave”

To be fully appreciated this grille should be considered as a part of an interior rather than as separate design. It is at its best in either formal or informal rooms of the English, Spanish, or French Renaissance, while its adaptability to Georgian or modern interiors is obvious.

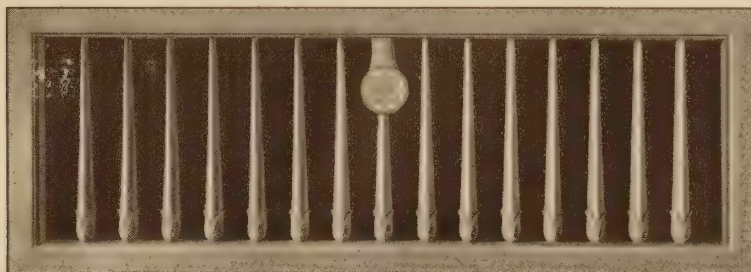


## SELECTION OF GRILLES

(Design Patents Pending)

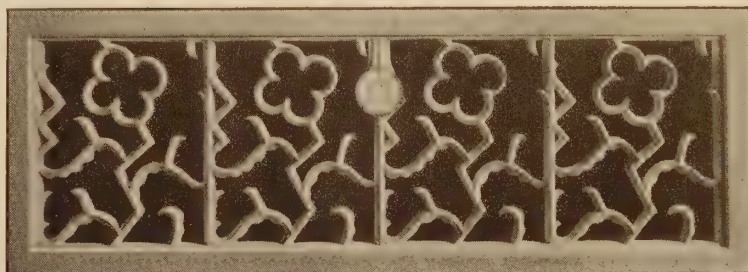
### "The Bud"

This design, based on the sprouting bud motif combines originality, classic simplicity and delicacy without fragility. Because of these qualities it will be found to be in good taste in any formal Georgian, English, French, Adam, Directoire or modern room.



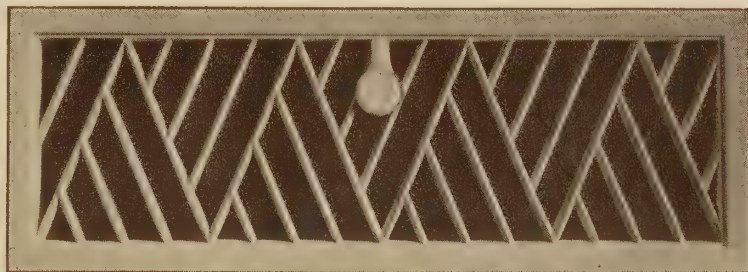
### "The Floral"

This pleasing design has unlimited possibilities in informal or semi-informal interiors. It is particularly well suited to early American rooms.



### "The Geometric"

A truly modern design without being faddish. It has characteristics that harmonize with rooms of Early American, English, Chippendale, or Heppelwhite setting, while its suitability for modern and ultra modern rooms is apparent.





## How to Select and Locate—

Both types of Herman Nelson Invisible Radiators are made in eight lengths and three heights. The "Immured" type is made in three depths while the "Paneled" type is made in two.

Thus the "Immured" type is made in seventy-two sizes and the "Paneled" type in forty-eight, making a total of one hundred and twenty Invisible Radiators from which a selection may be made to meet any requirement.

Neither "Immured" nor "Paneled" type radiators can be built in special lengths or depths. The "Paneled" type radiator can be built only in the three heights shown on pages 26-29. In addition to these three heights, "Immured" type radiators will be built in special heights when so ordered, at additional cost, but cannot be built less than 20-3/8" high.

If radiators are built higher than 30", the ratings should not be increased because experience has shown that when this height is exceeded, the heating effect may even be decreased.

We can guarantee only radiators of standard heights as shown in this catalog and can assume no responsibility for additional capacity or performance if radiators are made higher.

If grilles are made by others, we will not be responsible for the capacity of the radiators so equipped unless the free area of the grille is at least 75 per cent.

### *Ratings—Pages 20-29*

Invisible Radiators of both types are rated in square feet of standard equivalent cast-iron radiation set exposed in the room.

By definition, a standard cast-iron radiator will give off 240 B. t. u. per square foot of surface per hour, when filled with steam at 215° and when setting in a room having a temperature of 70°. Such a standard radiator will have a certain heating effect in the room in which it is installed. Likewise, an Invisible Radiator will have a certain heating effect in the room. Invisible Radiators are, therefore, rated in terms of square feet of standard cast-iron radiation that they can replace to furnish the same heating effect.

For example, as shown on page 27, the "Paneled" type radiator number 3021-D is rated at 33.8 square feet, which means that this radiator would have the same heating effect in the room in which it is installed as a 33.8

square foot standard cast-iron radiator would have in the same room when set standard without recess or cover.

This relation holds, regardless of whether steam or hot water is used. If the temperature of the steam or water in the cast-iron radiator is reduced, the number of B. t. u. given off by each square foot is also reduced. In the same way the heating capacity of an Invisible Radiator is reduced if the steam or water temperature is reduced. Therefore, an Invisible Radiator is so rated that it will produce the same heating effect in the room as an exposed radiator of the same rating, if the steam or water and the air temperatures are the same, regardless of whether steam or hot water is used as the source of heat.

### *Method of Rating*

The ratings published on pages 20 to 29 inclusive, are based on exhaustive tests conducted in the laboratories of this Company. As previously stated, these ratings are given in square feet of equivalent standard cast iron radiation, set exposed in the room and are approximately 10% greater than found by actual condensation to allow for increased heating effect.

The percentages of increase, for room heating effect, over the actual condensing capacities, agree with the results of tests and investigations conducted and published by well-known authorities. These investigations have shown considerable added room heating effect where the convection method of heating is employed.

It is left to the discretion of the engineer as to whether or not he wishes to take advantage of this increase. If not, he should reduce the ratings given on pages 20 to 29 by ten per cent (10%).

Many years' experience with thousands of heating installations, in this and foreign countries, have always shown Herman Nelson ratings to be conservative. There is no disposition on the part of this Company to unwisely economize in the amount of radiation to be specified for a given room, even though sales or business profits may be sacrificed.

We advise the architect and engineer to always employ a reasonable factor of safety, not because of the flexibility in radiator ratings but on account of heat loss and leakage conditions always found in buildings, which losses cannot generally be accurately predetermined by any rule or method of calculation. This



# Herman Nelson Invisible Radiators

factor is far greater than any variation involved in the rating of a particular radiator.

We conceive it to be the duty of the manufacturer to scientifically establish and accurately state the method of rating his products and the responsibility of the engineer to determine the duty and to properly adapt the products to it.

## *Selecting the Radiator*

On the following pages will be found diagrams showing the arrangement of both the "Immured" and "Paneled" type Herman Nelson Invisible Radiators when installed in outside walls. The letters on these diagrams refer to the tables on the opposite pages.

If the number of square feet of radiation required for a given room has been determined for the system to be used in terms of equivalent direct cast-iron radiation set exposed, it is only necessary to refer to the tables of dimensions and capacities to select a Herman Nelson Invisible Radiator or radiators to fit the space requirements and to have capacity equal to the required amount. This is equally true for gravity steam, vapor, vacuum, or hot water system radiators.

The actual capacity required for each room is a matter of engineering. This can be determined in any one of a number of ways. If the heating capacity required is determined in square feet of equivalent direct cast-iron radiation set exposed, it is a very simple matter to refer to the tables of dimensions and capacities to select the proper radiator.

If the heat loss is determined in terms of B. t. u. per hour, as recommended by the A. S. H. & V. E. it is necessary to divide the B. t. u. per hour by a factor which depends upon the type of system used, the temperature of the heating medium in the radiator, and the room temperature.

In the case of vapor, vacuum or gravity steam systems, this factor is 240 B. t. u. per hour for 215° F. temperature and 70° room temperature. This factor is higher for either greater steam temperatures or lower room temperatures and is lower for either lower steam temperatures or higher room temperatures.

In the case of hot water installations this factor varies with the mean temperature of the water in the radiator for which the system is designed and with the room temperature. As

in the case of the vapor, vacuum or gravity steam systems the factor is higher for lower room temperatures and vice versa.

The following table will serve as a guide in determining the B. t. u. output per sq. ft. of hot water installations for various water temperatures:

| Average Temperature of<br>Water in Radiator | B. T. U. Emitted Per Sq. Ft. of<br>Equivalent Direct Cast-Iron Radia-<br>tion Set Exposed for 70° Room<br>Temperature |
|---|---|
| 160   | 129   |
| 170   | 148   |
| 180   | 167   |
| 190   | 187   |
| 200   | 208   |

For example: if the temperature of the water at the inlet is 190° and the temperature at the outlet is 170° the mean temperature of the water in the radiator is 180°. With a room temperature of 70°, 167 B. t. u. will be emitted per hour per square foot of direct cast-iron radiation. Then if the total heat loss from the room is divided by this factor the result will be the number of square feet of equivalent direct cast-iron radiation required. This figure then determines the size of the radiator as given in the tables of capacities.

In general it will be found from a study of the tables of capacities that it is more economical of wall space to use the widest and highest Herman Nelson Invisible Radiators possible. It is also most economical in cost.

## *Location of Radiators*

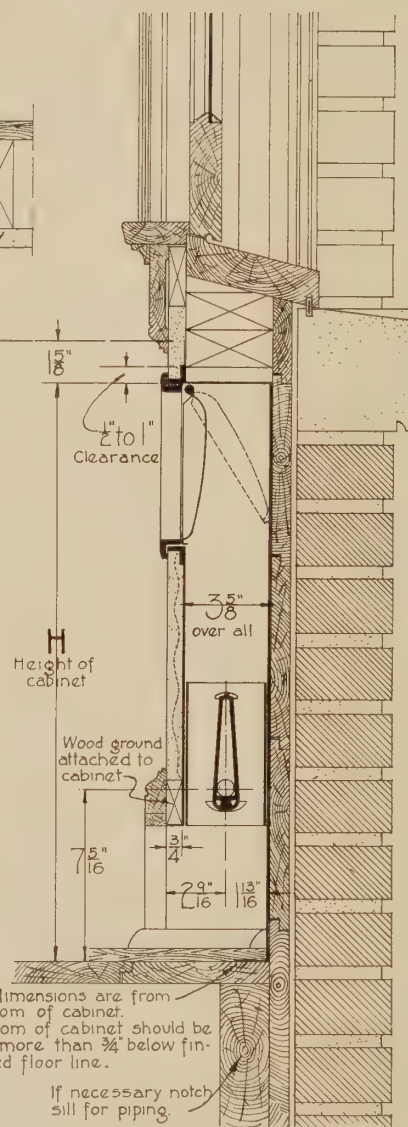
The laws governing the location of Herman Nelson Invisible Radiators are essentially the same as those governing the location of ordinary exposed radiators. In general, all radiators should be located at the points of greatest exposure, that is, they should be located on the outside walls and under the windows wherever possible.

There are many cases however, in which it is not feasible to locate the radiators at points of greatest exposure. As for example: in halls and vestibules where it is very frequently necessary to place them in the side of the stair case or in the side of the vestibule.

In all instances the Herman Nelson Invisible Radiators can be installed in the same locations as would be used for ordinary exposed radiators.



3 $\frac{5}{8}$  INCHES  
DEEP





# DIMENSIONS · CAPACITIES · WEIGHTS · ETC.

· THE · HERMAN · NELSON · INVISIBLE · RADIATORS ·

## IMMURED TYPE

REFER TO OPPOSITE  
PAGE FOR KEY TO  
DIMENSIONS.

ALL DIMENSIONS  
IN INCHES.

3<sup>5</sup>/<sub>8</sub> INCHES  
DEEP

THESE RADIATORS MAY BE  
USED FOR EITHER STEAM  
OR HOT WATER. CAPACITIES  
ARE GIVEN IN SQ. FT. OF  
EQUIVALENT STANDARD CAST  
IRON RADIATION SET EX-  
POSED IN THE ROOM. SEE  
METHOD OF RATING, PAGE 18.

### HEIGHT - H - 20<sup>3</sup>/<sub>8</sub> INCHES

| NUMBER          | 1511-C                         | 2011-C                         | 2511-C                         | 3011-C                         | 3511-C                         | 4011-C                         | 4511-C                         | 5011-C                         |
|-----------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| CAPACITY        | 10.9                           | 14.5                           | 18.2                           | 21.8                           | 25.4                           | 29.1                           | 32.8                           | 36.4                           |
| DIMENSION L     | 15                             | 20                             | 25                             | 30                             | 35                             | 40                             | 45                             | 50                             |
| DIMENSION H     | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> |
| APPR. SHPG. WT. | 50 <sup>#</sup>                | 64 <sup>#</sup>                | 77 <sup>#</sup>                | 90 <sup>#</sup>                | 105 <sup>#</sup>               | 117 <sup>#</sup>               | 132 <sup>#</sup>               | 141 <sup>#</sup>               |
| CODE WORD       | CABAL                          | CABIN                          | CACHE                          | CADDY                          | CADET                          | CAGED                          | CALCI                          | CALMY                          |

### HEIGHT - H - 24<sup>3</sup>/<sub>8</sub> INCHES

| NUMBER          | 1521-C                         | 2021-C                         | 2521-C                         | 3021-C                         | 3521-C                         | 4021-C                         | 4521-C                         | 5021-C                         |
|-----------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| CAPACITY        | 11.8                           | 15.8                           | 19.7                           | 23.7                           | 27.6                           | 31.5                           | 35.6                           | 39.5                           |
| DIMENSION L     | 15                             | 20                             | 25                             | 30                             | 35                             | 40                             | 45                             | 50                             |
| DIMENSION H     | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> |
| APPR. SHPG. WT. | 54 <sup>#</sup>                | 68 <sup>#</sup>                | 82 <sup>#</sup>                | 95 <sup>#</sup>                | 112 <sup>#</sup>               | 126 <sup>#</sup>               | 142 <sup>#</sup>               | 154 <sup>#</sup>               |
| CODE WORD       | CALVE                          | CAMEL                          | CAMPO                          | CANAL                          | CANCH                          | CANDY                          | CANNA                          | CANOE                          |

### HEIGHT - H - 30<sup>3</sup>/<sub>8</sub> INCHES

| NUMBER          | 1531-C                         | 2031-C                         | 2531-C                         | 3031-C                         | 3531-C                         | 4031-C                         | 4531-C                         | 5031-C                         |
|-----------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| CAPACITY        | 13.3                           | 17.7                           | 22.0                           | 26.4                           | 30.8                           | 35.3                           | 39.7                           | 44.1                           |
| DIMENSION - L   | 15                             | 20                             | 25                             | 30                             | 35                             | 40                             | 45                             | 50                             |
| DIMENSION - H   | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> |
| APPR. SHPG. WT. | 62 <sup>#</sup>                | 76 <sup>#</sup>                | 90 <sup>#</sup>                | 107 <sup>#</sup>               | 124 <sup>#</sup>               | 140 <sup>#</sup>               | 156 <sup>#</sup>               | 174 <sup>#</sup>               |
| CODE WORD       | CAPER                          | CARAT                          | CARBO                          | CAROL                          | CARRY                          | CARVE                          | CASED                          | CASSE                          |

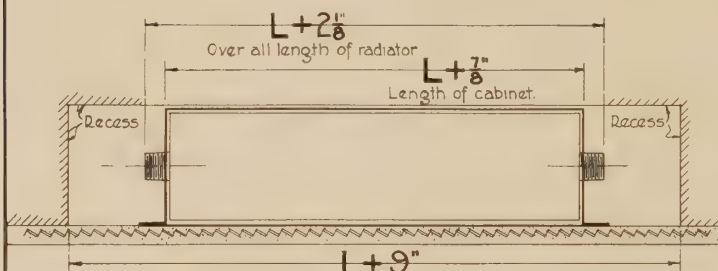


# APPLICATION & DIMENSIONS

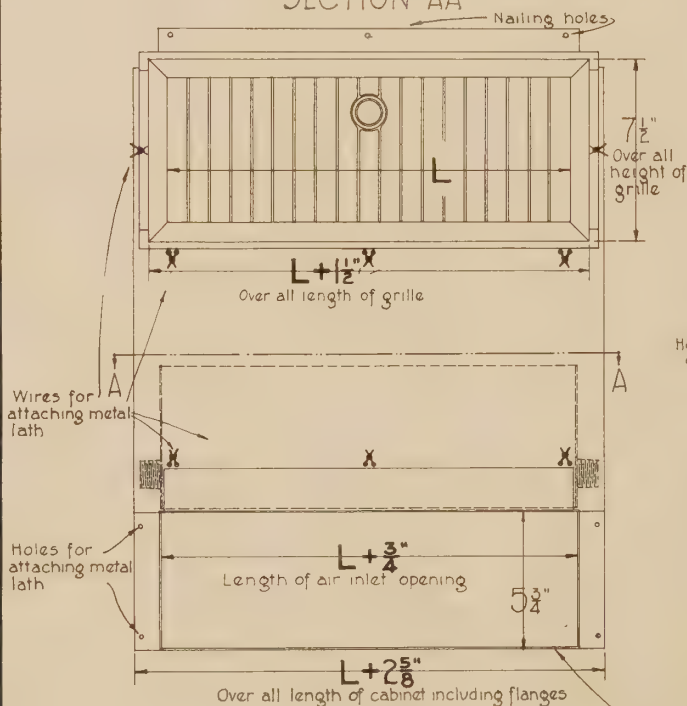
THE HERMAN NELSON INVISIBLE RADIATORS

## IMMURED TYPE

## 4<sup>7</sup>/<sub>8</sub> INCHES DEEP



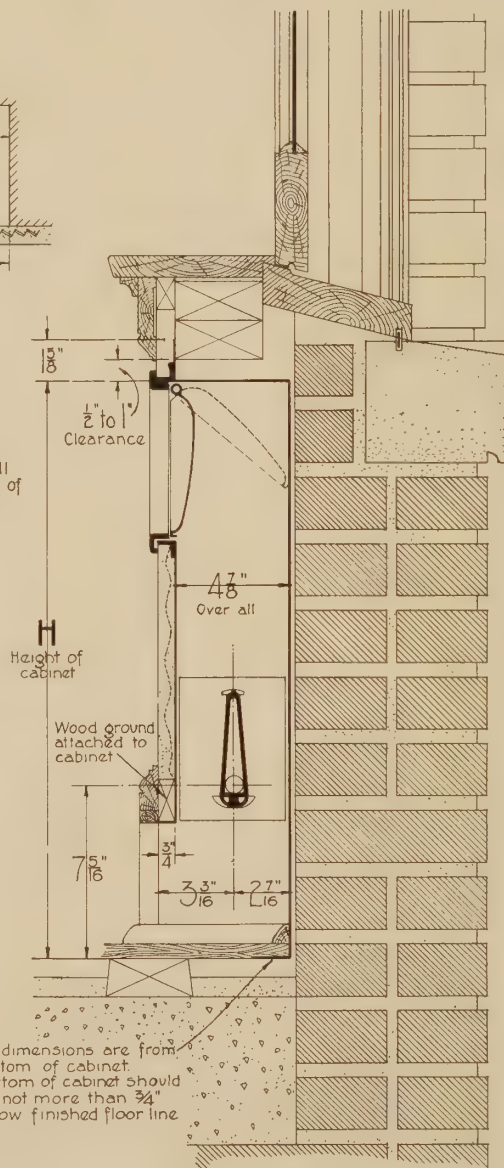
SECTION AA



FRONT VIEW OF CABINET  
BUILDING CONSTRUCTION OMITTED.

### NOTES

1. See opposite page for valves of lettered dimensions.
2. All steam connections should be thoroughly tested before lathing and plastering has been completed.
3. Metal lath should be placed over entire cabinet and recess, attaching to cabinet by means of wire loops.
4. If there is a plate on rough floor it should be removed in recess.



CROSS SECTION

All dimensions are from bottom of cabinet. Bottom of cabinet should be not more than  $\frac{3}{4}"$  below finished floor line.



# DIMENSIONS · CAPACITIES · WEIGHTS · ETC.

· THE · HERMAN · NELSON · INVISIBLE · RADIATORS ·

## IMMURED TYPE

REFER TO OPPOSITE  
PAGE FOR KEY TO  
DIMENSIONS.

ALL DIMENSIONS  
IN INCHES.

4<sup>7</sup>/<sub>8</sub> INCHES  
DEEP

THESE RADIATORS MAY BE  
USED FOR EITHER STEAM  
OR HOT WATER. CAPACITIES  
ARE GIVEN IN SQ. FT. OF  
EQUIVALENT STANDARD CAST  
IRON RADIATION SET EX-  
POSED IN THE ROOM. SEE  
METHOD OF RATING, PAGE 18

### HEIGHT - H - 20<sup>3</sup>/<sub>8</sub> INCHES

| NUMBER          | 1512-C                         | 2012-C                         | 2512-C                         | 3012-C                         | 3512-C                         | 4012-C                         | 4512-C                         | 5012-C                         |
|-----------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| CAPACITY        | 14.8                           | 19.7                           | 24.7                           | 29.7                           | 34.6                           | 39.5                           | 44.6                           | 49.5                           |
| DIMENSION-L     | 15                             | 20                             | 25                             | 30                             | 35                             | 40                             | 45                             | 50                             |
| DIMENSION-H     | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> |
| APPR. SHPG. WT. | 52*                            | 65*                            | 79*                            | 94*                            | 110*                           | 121*                           | 138*                           | 156*                           |
| CODE WORD       | CASUS                          | CATCH                          | CATER                          | CAUMA                          | CAUSE                          | CAVIL                          | CEASE                          | CEDAR                          |

### HEIGHT - H - 24<sup>3</sup>/<sub>8</sub> INCHES

| NUMBER          | 1522-C                         | 2022-C                         | 2522-C                         | 3022-C                         | 3522-C                         | 4022-C                         | 4522-C                         | 5022-C                         |
|-----------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| CAPACITY        | 16.0                           | 21.4                           | 26.8                           | 32.2                           | 37.5                           | 42.8                           | 48.2                           | 53.6                           |
| DIMENSION-L     | 15                             | 20                             | 25                             | 30                             | 35                             | 40                             | 45                             | 50                             |
| DIMENSION-H     | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> |
| APPR. SHPG. WT. | 57*                            | 72*                            | 86*                            | 101*                           | 117*                           | 129*                           | 146*                           | 162*                           |
| CODE WORD       | CENSE                          | CENTI                          | CERIC                          | CETYL                          | CHAIN                          | CHALK                          | CHAMP                          | CHANT                          |

### HEIGHT - H - 30<sup>3</sup>/<sub>8</sub> INCHES

| NUMBER          | 1532-C                         | 2032-C                         | 2532-C                         | 3032-C                         | 3532-C                         | 4032-C                         | 4532-C                         | 5032-C                         |
|-----------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| CAPACITY        | 18.0                           | 23.9                           | 29.8                           | 35.8                           | 41.8                           | 47.7                           | 53.8                           | 59.7                           |
| DIMENSION-L     | 15                             | 20                             | 25                             | 30                             | 35                             | 40                             | 45                             | 50                             |
| DIMENSION-H     | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> |
| APPR. SHPG. WT. | 66*                            | 82*                            | 96*                            | 111*                           | 127*                           | 144*                           | 162*                           | 181*                           |
| CODE WORD       | CHAOS                          | CHAPE                          | CHARA                          | CHARM                          | CHATI                          | CHAYA                          | CHECK                          | CHEER                          |

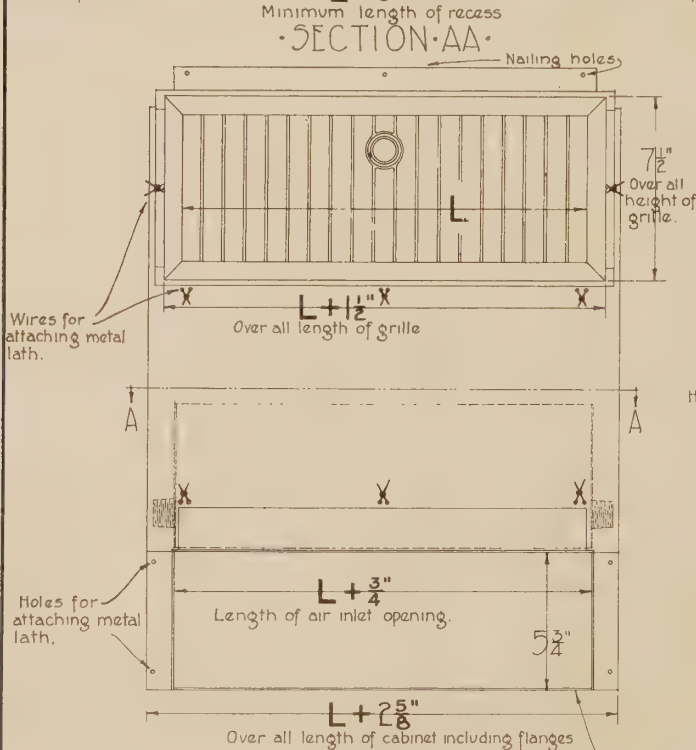
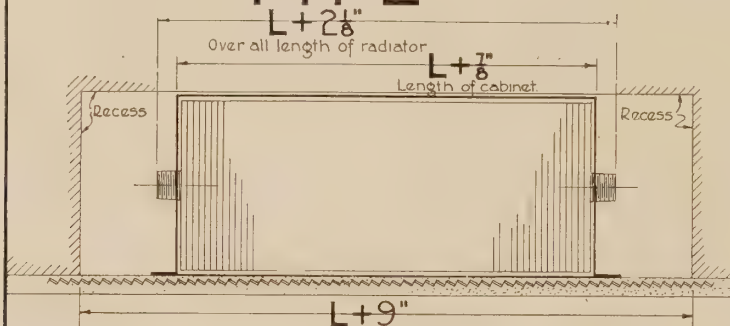


# APPLICATION & DIMENSIONS

THE HERMAN NELSON INVISIBLE RADIATORS

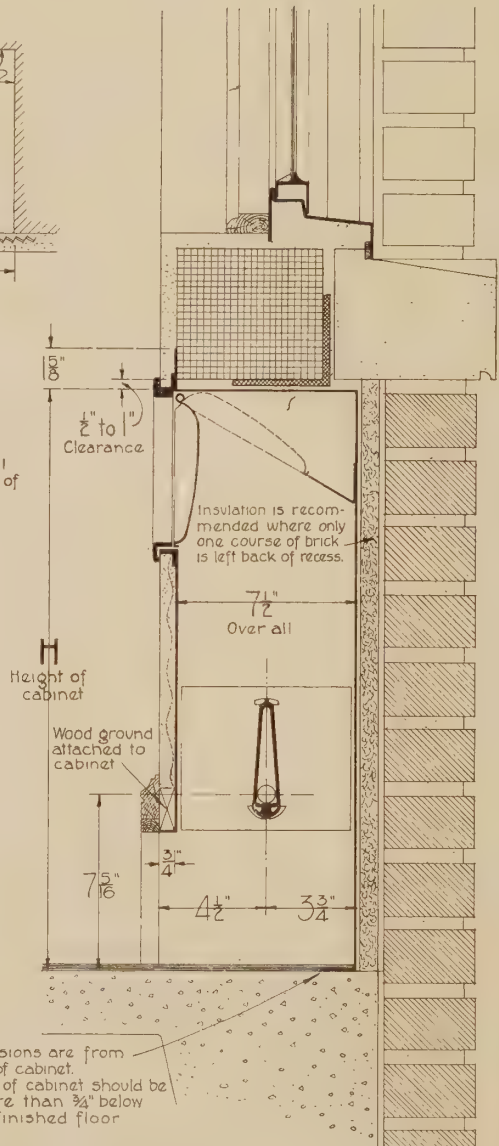
## IMMURED TYPE

## 7 1/2 INCHES DEEP



BUILDING CONSTRUCTION OMITTED  
NOTES

1. See opposite page for values of lettered dimensions
2. All steam connections should be thoroughly tested before lathing and plastering has been completed.
3. Metal lath should be placed over entire cabinet and recess, attaching to cabinet by means of wire loops.
4. If there is a plate on rough floor it should be removed in recess.





# DIMENSIONS · CAPACITIES · WEIGHTS · ETC.

· THE · HERMAN · NELSON · INVISIBLE · RADIATORS ·

## IMMURED TYPE

REFER TO OPPOSITE  
PAGE FOR KEY TO  
DIMENSIONS.

ALL DIMENSIONS  
IN INCHES.

7 <sup>1</sup>/<sub>2</sub> INCHES  
DEEP

THESE RADIATORS MAY BE  
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OR HOT WATER. CAPACITIES  
ARE GIVEN IN SQ. FT. OF  
EQUIVALENT STANDARD CAST  
IRON RADIATION SET EX-  
POSED IN THE ROOM. SEE  
METHOD OF RATING, PAGE 18.

### HEIGHT - H - 20 <sup>3</sup>/<sub>8</sub> INCHES

| NUMBER          | 1513-C                         | 2013-C                         | 2513-C                         | 3013-C                         | 3513-C                         | 4013-C                         | 4513-C                         | 5013-C                         |
|-----------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| CAPACITY        | 18.6                           | 24.9                           | 31.1                           | 37.3                           | 43.5                           | 49.7                           | 55.9                           | 62.2                           |
| DIMENSION L     | 15                             | 20                             | 25                             | 30                             | 35                             | 40                             | 45                             | 50                             |
| DIMENSION H     | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> |
| APPR. SHPG. WT. | 57*                            | 78*                            | 97*                            | 113*                           | 132*                           | 143*                           | 163*                           | 222*                           |
| CODE WORD       | CHERT                          | CHESS                          | CHEVE                          | CHACK                          | CHUNK                          | CHURR                          | CINCH                          | CIRRO                          |

### HEIGHT - H - 24 <sup>3</sup>/<sub>8</sub> INCHES

| NUMBER          | 1523-C                         | 2023-C                         | 2523-C                         | 3023-C                         | 3523-C                         | 4023-C                         | 4523-C                         | 5023-C                         |
|-----------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| CAPACITY        | 20.3                           | 27.1                           | 33.9                           | 40.6                           | 47.4                           | 54.2                           | 61.0                           | 67.7                           |
| DIMENSION L     | 15                             | 20                             | 25                             | 30                             | 35                             | 40                             | 45                             | 50                             |
| DIMENSION H     | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> |
| APPR. SHPG. WT. | 65*                            | 86*                            | 105*                           | 120*                           | 140*                           | 153*                           | 180*                           | 235*                           |
| CODE WORD       | CLACK                          | CLANG                          | CLASP                          | CLEAR                          | CLICK                          | CLIMB                          | CLOAK                          | CLOSE                          |

### HEIGHT - H - 30 <sup>3</sup>/<sub>8</sub> INCHES

| NUMBER          | 1533-C                         | 2033-C                         | 2533-C                         | 3033-C                         | 3533-C                         | 4033-C                         | 4533-C                         | 5033-C                         |
|-----------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| CAPACITY        | 22.8                           | 30.5                           | 38.1                           | 45.7                           | 53.3                           | 60.9                           | 68.5                           | 76.1                           |
| DIMENSION - L   | 15                             | 20                             | 25                             | 30                             | 35                             | 40                             | 45                             | 50                             |
| DIMENSION - H   | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> |
| APPR. SHPG. WT. | 75*                            | 97*                            | 115*                           | 129*                           | 148*                           | 161*                           | 220*                           | 260*                           |
| CODE WORD       | CLOTH                          | CLOUD                          | CLOVE                          | COACH                          | COAST                          | COIGN                          | COLOR                          | COMER                          |



5  $\frac{1}{2}$  INCHES  
DEEP



- 26

# DIMENSIONS · CAPACITIES · WEIGHTS · ETC.

· THE · HERMAN · NELSON · INVISIBLE · RADIATORS ·

## PANELED TYPE

REFER TO OPPOSITE  
PAGE FOR KEY TO  
DIMENSIONS.

ALL DIMENSIONS  
IN INCHES.

5 <sup>1</sup>/<sub>2</sub> INCHES  
DEEP

THESE RADIATORS MAY BE  
USED FOR EITHER STEAM  
OR HOT WATER. CAPACITIES  
ARE GIVEN IN SQ. FT. OF  
EQUIVALENT STANDARD CAST  
IRON RADIATION SET EX-  
POSED IN THE ROOM. SEE  
METHOD OF RATING, PAGE 18.

### HEIGHT - H - 20 <sup>3</sup>/<sub>8</sub> INCHES

| NUMBER          | 1511-D                         | 2011-D                         | 2511-D                         | 3011-D                         | 3511-D                         | 4011-D                         | 4511-D                         | 5011-D                         |
|-----------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| CAPACITY        | 15.5                           | 20.6                           | 25.8                           | 31.0                           | 36.1                           | 41.3                           | 46.5                           | 51.6                           |
| DIMENSION L     | 15                             | 20                             | 25                             | 30                             | 35                             | 40                             | 45                             | 50                             |
| DIMENSION H     | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> |
| APPR. SHPG. WT. | 105 <sup>#</sup>               | 125 <sup>#</sup>               | 146 <sup>#</sup>               | 167 <sup>#</sup>               | 188 <sup>#</sup>               | 209 <sup>#</sup>               | 230 <sup>#</sup>               | 250 <sup>#</sup>               |
| CODE WORD       | DAILY                          | DALLE                          | DANDY                          | DASHY                          | DATUM                          | DAUNT                          | DEBAR                          | DEBUT                          |

### HEIGHT - H - 24 <sup>3</sup>/<sub>8</sub> INCHES

| NUMBER          | 1521-D                         | 2021-D                         | 2521-D                         | 3021-D                         | 3521-D                         | 4021-D                         | 4521-D                         | 5021-D                         |
|-----------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| CAPACITY        | 16.9                           | 22.5                           | 28.2                           | 33.8                           | 39.4                           | 45.2                           | 50.8                           | 56.5                           |
| DIMENSION L     | 15                             | 20                             | 25                             | 30                             | 35                             | 40                             | 45                             | 50                             |
| DIMENSION H     | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> |
| APPR. SHPG. WT. | 110 <sup>#</sup>               | 133 <sup>#</sup>               | 155 <sup>#</sup>               | 177 <sup>#</sup>               | 200 <sup>#</sup>               | 221 <sup>#</sup>               | 244 <sup>#</sup>               | 266 <sup>#</sup>               |
| CODE WORD       | DECAN                          | DEIGN                          | DELVE                          | DEMIT                          | DEMUR                          | DENSE                          | DEPOT                          | DEPTH                          |

### HEIGHT - H - 30 <sup>3</sup>/<sub>8</sub> INCHES

| NUMBER          | 1531-D                         | 2031-D                         | 2531-D                         | 3031-D                         | 3531-D                         | 4031-D                         | 4531-D                         | 5031-D                         |
|-----------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| CAPACITY        | 18.8                           | 25.0                           | 31.3                           | 37.5                           | 43.8                           | 50.0                           | 56.2                           | 62.5                           |
| DIMENSION - L   | 15                             | 20                             | 25                             | 30                             | 35                             | 40                             | 45                             | 50                             |
| DIMENSION - H   | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> |
| APPR. SHPG. WT. | 125 <sup>#</sup>               | 149 <sup>#</sup>               | 175 <sup>#</sup>               | 200 <sup>#</sup>               | 225 <sup>#</sup>               | 250 <sup>#</sup>               | 275 <sup>#</sup>               | 300 <sup>#</sup>               |
| CODE WORD       | DIARY                          | DIGHT                          | DIPHY                          | DONOR                          | DORMY                          | DORSE                          | DATER                          | DOUSE                          |

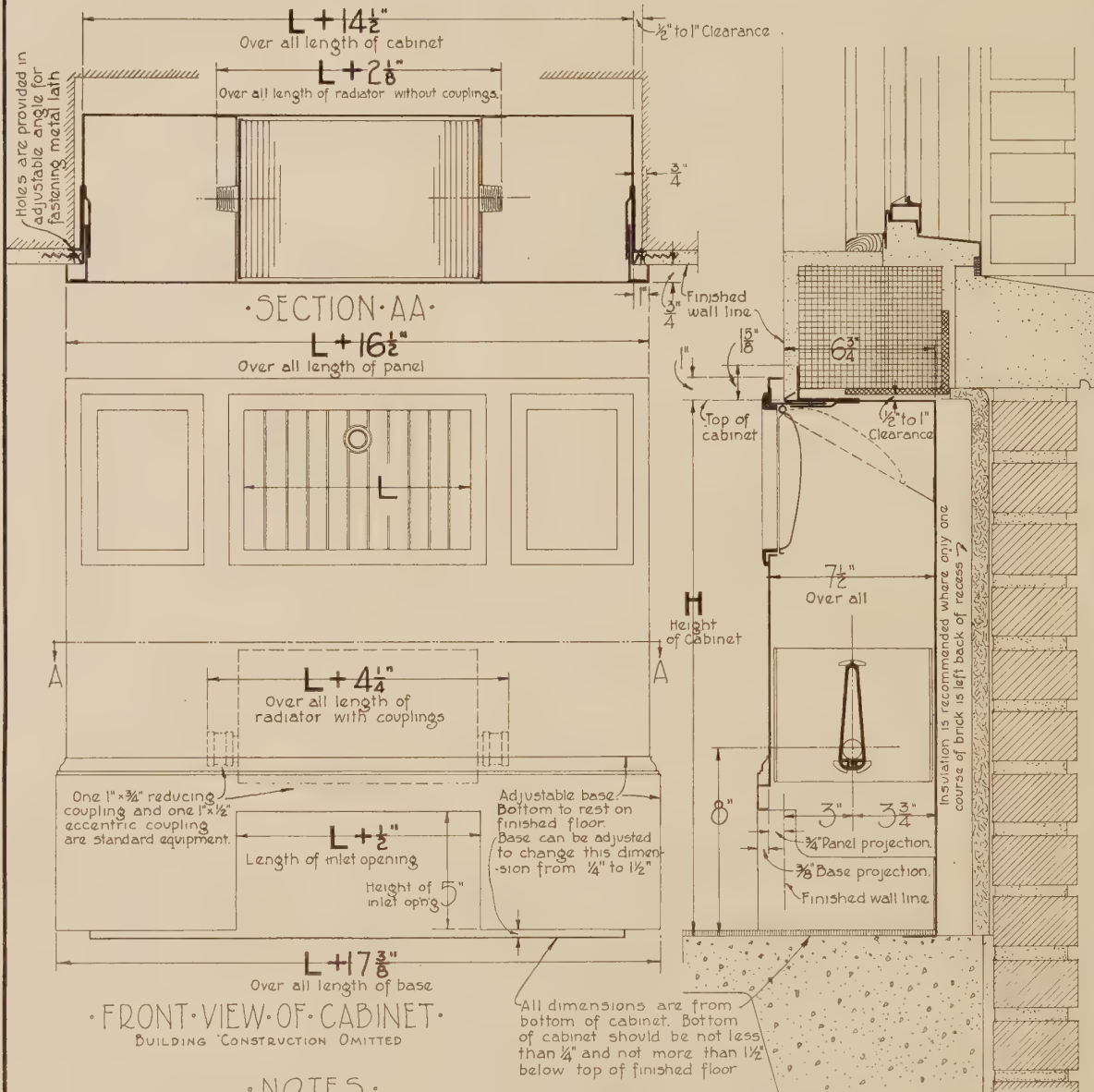


# APPLICATION & DIMENSIONS.

THE HERMAN NELSON INVISIBLE RADIATORS.

PANELED  
TYPE

7 1/2 INCHES  
DEEP



## NOTES

1. See opposite page for valves of lettered dimensions
2. Metal lath should be placed around entire cabinet and recess attaching to cabinet by means of wire loops
3. If there is a plate on rough floor it should be removed in recess.

# DIMENSIONS · CAPACITIES · WEIGHTS · ETC.

· THE · HERMAN · NELSON · INVISIBLE · RADIATORS ·

## PANELED TYPE

REFER TO OPPOSITE  
PAGE FOR KEY TO  
DIMENSIONS.

ALL DIMENSIONS  
IN INCHES.

7 <sup>1</sup>/<sub>2</sub> INCHES  
DEEP

THESE RADIATORS MAY BE  
USED FOR EITHER STEAM  
OR HOT WATER. CAPACITIES  
ARE GIVEN IN SQ. FT. OF  
EQUIVALENT STANDARD CAST  
IRON RADIATION SET EX-  
POSED IN THE ROOM. SEE  
METHOD OF RATING, PAGE 18.

### HEIGHT - H - 20 <sup>3</sup>/<sub>8</sub> INCHES

| NUMBER          | 1512-D                         | 2012-D                         | 2512-D                         | 3012-D                         | 3512-D                         | 4012-D                         | 4512-D                         | 5012-D                         |
|-----------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| CAPACITY        | 17.2                           | 23.0                           | 28.6                           | 34.4                           | 40.0                           | 45.8                           | 51.5                           | 57.3                           |
| DIMENSION L     | 15                             | 20                             | 25                             | 30                             | 35                             | 40                             | 45                             | 50                             |
| DIMENSION H     | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> | 20 <sup>3</sup> / <sub>8</sub> |
| APPR. SHPG. WT. | 117 <sup>#</sup>               | 140 <sup>#</sup>               | 164 <sup>#</sup>               | 187 <sup>#</sup>               | 211 <sup>#</sup>               | 233 <sup>#</sup>               | 257 <sup>#</sup>               | 280 <sup>#</sup>               |
| CODE WORD       | DOWEL                          | DRABA                          | DRACO                          | DRAFF                          | DRAIL                          | DRAMA                          | DRAPE                          | DRAWL                          |

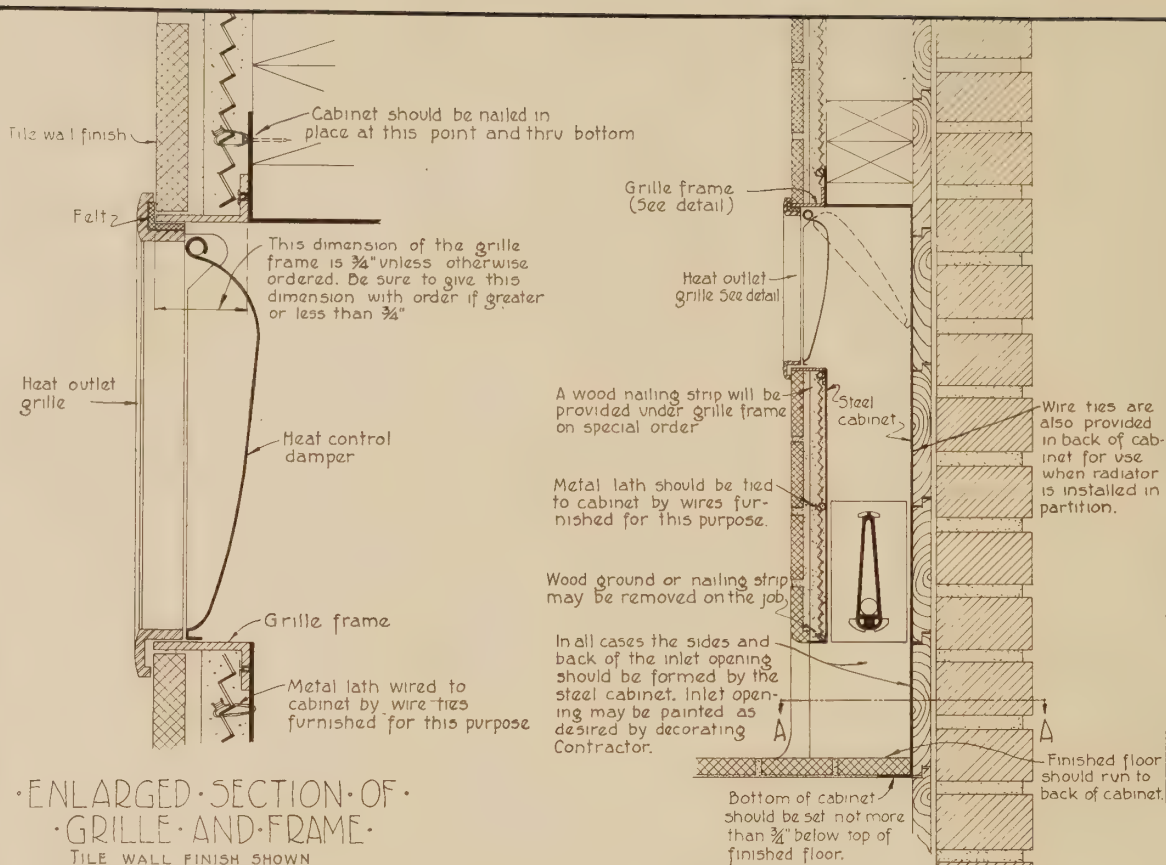
### HEIGHT - H - 24 <sup>3</sup>/<sub>8</sub> INCHES

| NUMBER          | 1522-D                         | 2022-D                         | 2522-D                         | 3022-D                         | 3522-D                         | 4022-D                         | 4522-D                         | 5022-D                         |
|-----------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| CAPACITY        | 18.8                           | 25.0                           | 31.2                           | 37.5                           | 43.7                           | 50.0                           | 56.3                           | 62.5                           |
| DIMENSION L     | 15                             | 20                             | 25                             | 30                             | 35                             | 40                             | 45                             | 50                             |
| DIMENSION H     | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> | 24 <sup>3</sup> / <sub>8</sub> |
| APPR. SHPG. WT. | 125 <sup>#</sup>               | 148 <sup>#</sup>               | 175 <sup>#</sup>               | 201 <sup>#</sup>               | 225 <sup>#</sup>               | 249 <sup>#</sup>               | 275 <sup>#</sup>               | 300 <sup>#</sup>               |
| CODE WORD       | DREAR                          | DRENG                          | DRESS                          | DRIER                          | DRIFT                          | DRILL                          | DRIVE                          | DROIT                          |

### HEIGHT - H - 30 <sup>3</sup>/<sub>8</sub> INCHES

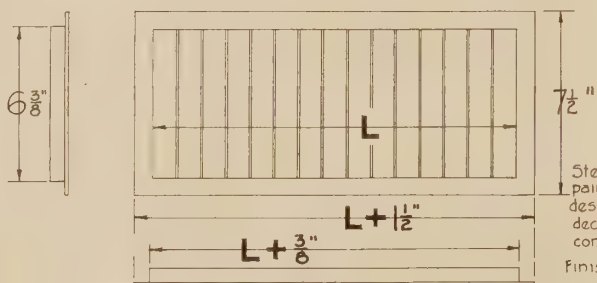
| NUMBER          | 1532-D                         | 2032-D                         | 2532-D                         | 3032-D                         | 3532-D                         | 4032-D                         | 4532-D                         | 5032-D                         |
|-----------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| CAPACITY        | 21.1                           | 28.2                           | 35.2                           | 42.3                           | 49.3                           | 56.4                           | 63.4                           | 70.5                           |
| DIMENSION L     | 15                             | 20                             | 25                             | 30                             | 35                             | 40                             | 45                             | 50                             |
| DIMENSION H     | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> | 30 <sup>3</sup> / <sub>8</sub> |
| APPR. SHPG. WT. | 136 <sup>#</sup>               | 162 <sup>#</sup>               | 189 <sup>#</sup>               | 216 <sup>#</sup>               | 243 <sup>#</sup>               | 270 <sup>#</sup>               | 297 <sup>#</sup>               | 325 <sup>#</sup>               |
| CODE WORD       | DROLL                          | DRONE                          | DRUID                          | DUCAT                          | DULSE                          | DURRA                          | DWANG                          | DWELL                          |





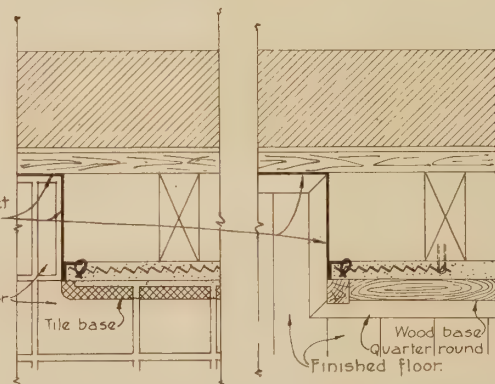
• ENLARGED SECTION OF •  
• GRILLE AND FRAME •  
TILE WALL FINISH SHOWN

• CROSS SECTION •  
TILE WALL FINISH SHOWN.



• GRILLE DIMENSIONS •

The above dimensions apply to grilles of all designs and for both the IMMURED and PANELED TYPES. For dimension "L" see tables of dimensions.



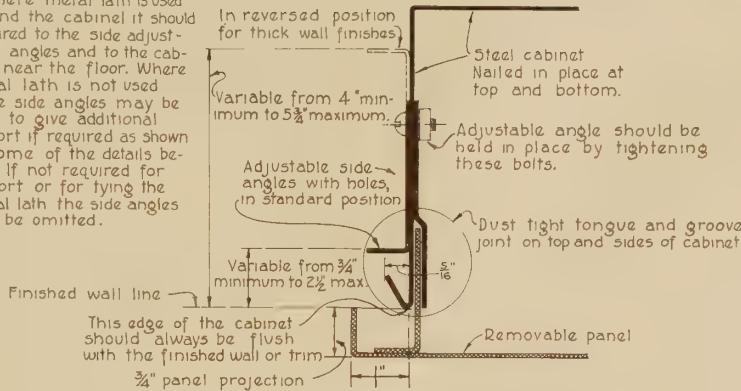
• SECTION AA WITH •  
• TILE WALL FINISH •  
• AND BASE •

• SECTION AA WITH •  
• PLASTER WALL •  
• FINISH AND •  
• WOOD BASE •

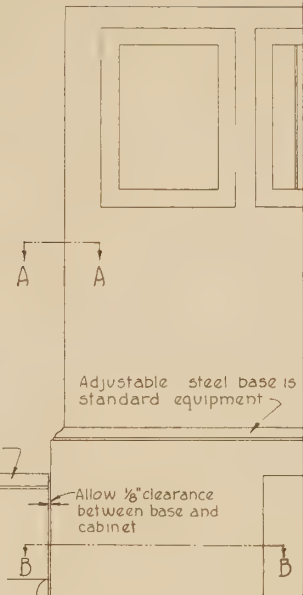
# • APPLICATION DETAILS • • IMMURED TYPE •

# • NOTE •

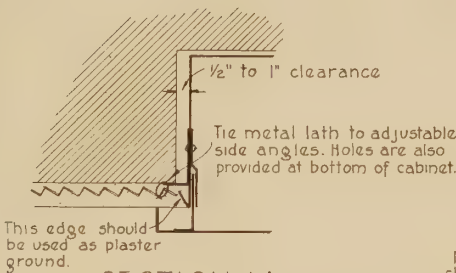
Where metal lath is used around the cabinet it should be wired to the side adjustable angles and to the cabinet near the floor. Where metal lath is not used these side angles may be used to give additional support if required as shown in some of the details below. If not required for support or for tying the metal lath the side angles may be omitted.



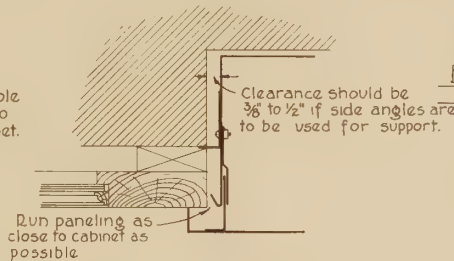
• ENLARGED • SECTION • AA •  
BUILDING CONSTRUCTION OMITTED



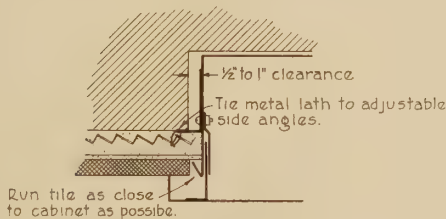
• FRONT • VIEW • OF •  
STANDARD • INSTALLATION



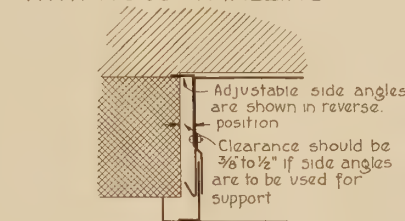
• SECTION • AA •  
• WITH • PLASTER • WALL • FINISH •



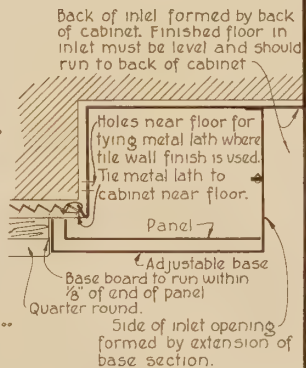
• SECTION • AA •  
• WITH • WOOD • PANELING •



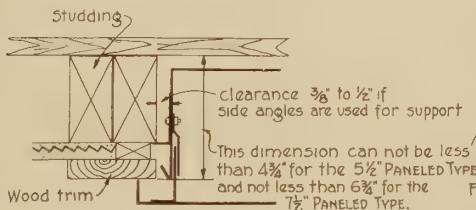
• SECTION • AA •  
• WITH • TILE • WALL • FINISH •



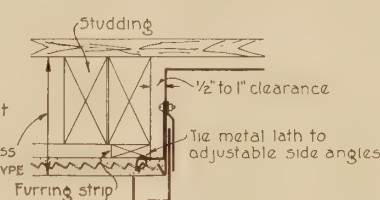
• SECTION • AA • WITH • FACE • BRICK •  
• OR • OTHER • THICK • WALL • FINISHES •



• SECTION • BB •  
PLASTER WALL FINISH SHOWN



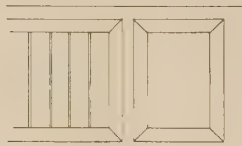
• SECTION • AA • WITH • SHALLOW • RECESS •  
• USING • WOOD • TRIM • TO • PROVIDE •  
• REQUIRED • DEPTH •



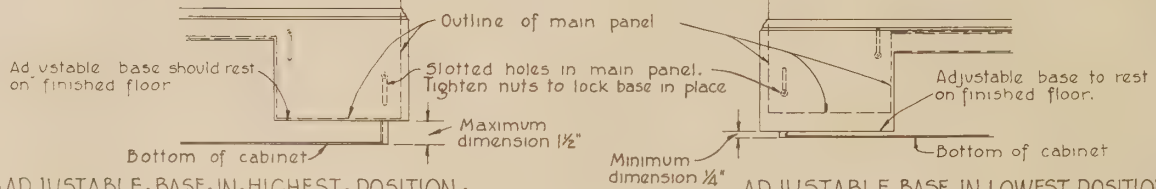
• SECTION • AA • WHERE • FURRING •  
• IS • USED • TO • PROVIDE • REQUIRED • DEPTH •

## • APPLICATION • DETAILS • • PANELED • TYPE •





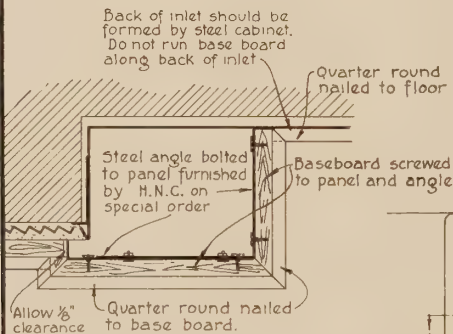
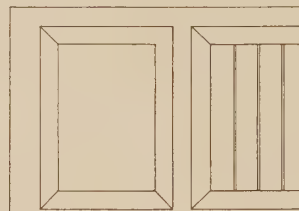
Bottom of cabinet should be set as close as possible to top of finished floor but not closer than  $\frac{1}{4}$ " nor farther than  $1\frac{1}{2}$ ". Finished floor in inlet must be level.



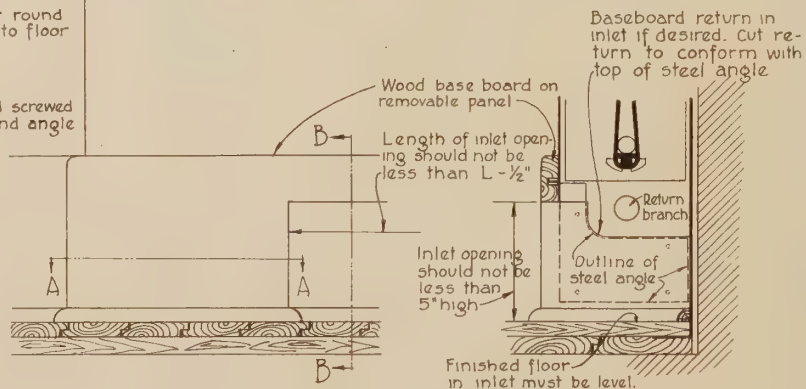
ADJUSTABLE BASE IN HIGHEST POSITION.

ADJUSTABLE BASE IN LOWEST POSITION.

METHOD OF ADJUSTING BASE FOR VARYING DISTANCES FROM THE BOTTOM OF THE CABINET TO THE TOP OF THE FINISHED FLOOR.



SECTION AA.



PARTIAL FRONT VIEW.

SECTION BB.

SUGGESTED METHOD OF INSTALLING WOOD BASE BOARD ACROSS FRONT OF PANEL.

APPLICATION DETAILS  
PANELED TYPE

## How to Order Herman Nelson Invisible Radiators

Before shipment of the proper equipment can be made, certain information is required. Each radiator has been given a number and code word which completely describes it. If a radiator is to be used on a steam, vapor or vacuum system and the "Standard" design grille is selected, it may be ordered by simply giving the number or code word.

**Hot Water Systems**—If the radiator is to be used with a hot water system, the order must so state, so that the heating element may be equipped with an air vent tapping as illustrated on page 15. These tapings cannot be installed on the job. (See pages 40-43).

**Grilles and Dampers**—The order should specifically state the grille design desired, as shown on pages 16 and 17. The "Standard" design shown at the top of page 16 will be furnished if the order does not specifically designate another grille selection.

All grilles are regularly furnished with dampers complete with operating mechanism, as shown on page 10. If the dampers are not required, the order should so state, in which event the grille will be furnished without the damper.

If grilles are to be made by others, and damper control is required, the dampers and parts will be shipped to the grille manufacturer to be installed by him, provided we are instructed to do so. Unless other instructions are given, the dampers will not be furnished when the grilles are omitted. If grilles are made by others this company will not be responsible for the capacity of radiators so equipped unless the free area of the grilles is at least 75%.

Grilles for air inlet, at base of cabinet, will not be furnished, nor are they recommended.

**Special Heights**—Neither "Immured" nor "Paneled" type radiators can be built in special lengths or depths. The "Paneled" type can be built only in the three heights shown on pages 26-29. In addition to these three heights, "Immured" type radiators will be built in special heights, when so ordered, at additional cost, but cannot be built less than 20-3/8" high. When ordering special height "Immured" type radiators, dimension "H" as shown on pages 20-25, must be given on the order.

If radiators are built higher than 30", the

ratings should not be increased. We can guarantee only radiators of standard heights as shown in this catalog and can assume no responsibility for additional capacity or performance if radiators are made higher.

**Special Grille Frames to Meet Different Wall Finishes**—All "Immured" type radiators are shipped with grille frames extending 3/4" from the front of the cabinet unless otherwise ordered. This is the proper depth to meet the thickness of plastered walls, in the majority of cases. If the plaster thickness is greater than this, or if tile or any other wall finish is used, the distance from the front of the cabinet to the finished wall line should be given on the order. See page 30. 3/4" frames for plastered walls and 1-1/2" frames for tile walls are carried in stock. All other sizes are built to dimensions after the order is received.

Special grille frames are not required for the "Paneled" type, regardless of the thickness of wall finish, because the cabinet may be adapted to practically any thickness by moving the adjustable angles backward or forward, as explained on page 31.

Special frames are not required for the air inlet opening at the bottom of the cabinet in either type, and cannot be furnished.

**Nailing Strips**—Unless otherwise ordered, all "Immured" radiators are equipped with a nailing strip above the air inlet opening at the base of the cabinet. This nailing strip will be omitted on special order only. If a second nailing strip is desired under the top grille opening, it should be specifically called for on the order.

**"Paneled" Type Adjustable Bases**—The standard steel adjustable base for the "Paneled" type will be furnished unless we are otherwise instructed. If a wood base is to be installed across the removable panel on the job, this information should be given in the order, in which event the steel base will be omitted and instead we will furnish supporting angles for the wood bases, as shown on pages 13 and 32.

**Shipping Weights and Method of Shipping**—Approximate shipping weights for each size radiator are given on pages 20 and 29. Information regarding the method of crating and shipping is given on page 13.



## INSTALLATION OF THE —

### *The Recess*

The first step is to provide the proper size recess or wall pocket as shown in the illustration below.

By referring to the tables of dimensions, pages 20 to 25, the overall length of the recess in inches will be found to be  $L+9''$ , for the radiator to be installed.



*The recess*

The minimum depth of the recess, will be found to be equal to the depth of the radiator selected. *The depth of the recess is measured from the face of the wall before the lath is applied.*

The height of the recess is measured from the level the cabinet will set on. This will be found to be  $H$  plus  $1/2$  to 1 inch for clearance. In all cases nailing strips should be provided at the top of the recess and a nailing surface under the cabinet as shown above and on pages 20 to 25. If a plate is used it should be omitted in the recess.

### *Setting the Cabinet*

The cabinet is then placed in the recess and nailed in place through the nail holes provided in the top flange and in the bottom of the cabinet. Care should be taken to be sure that the cabinet is level or pitches slightly to the return end. *The cabinet is usually set on the rough floor. If the finished floor is thicker than  $3/4$  inch the cabinet should be blocked up so that the bottom of the cabinet is not more than  $3/4$ '' below the top*

*of the finished floor as shown on pages 20-25. If the cabinet is set in this way the inlet opening is never less than 5'' high. These precautions are very important.*

### *Piping*

It is recommended that the piping connections be run from the heating element to the main piping in order that no union connections will be required in the concealed piping. The piping should be carefully tested for leaks before the lath is installed. See pages 42 and 43 for piping suggestions.

The steel shield in the outlet opening should not be removed at this time as it protects the heating element from plaster and other debris.

The heating element is shipped inside the cabinet as shown in the lower illustration on



*Radiator nailed in place at top and bottom and piping installed.  
Note wire lath ties provided*

page 10. It need never be removed from the cabinet because the one inch male pipe connections extend through the cabinet at each end.

For the purpose of setting sleeves, etc., it will be found that the overall length of the heating element to the ends of the pipe connections is equal to  $L+2-1/8''$  as given on pages 20-25.

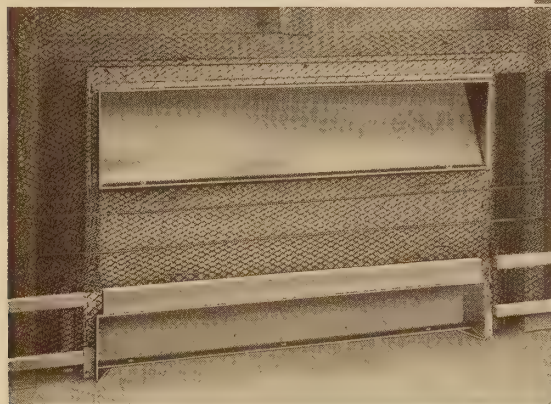
When ordered for a hot water system the heating element is equipped with an internal air vent tapping in which the heating contractor must install a  $1/8''$  hand operated air valve. See pages 15 and 43.

## “IMMURED” TYPE

### *Lathing*

The next step is to apply the metal lath across the front of the cabinet as shown in the third illustration. Wire ties are furnished in the front of the cabinet for fastening the metal lath. Similar ties are furnished in the back of the cabinet for use when the radiators are installed in a narrow partition with metal lath on both sides. Holes for additional ties are provided at the ends of the openings in the cabinets. It is recommended that rib metal lath be used across the front of the cabinet.

The wood strip above the inlet opening is provided for use as a nailing strip. It can be easily removed when not needed. If the radiator is installed in an ordinary plaster wall



*Metal lath applied ready for plastering. Note the rib lath across front of cabinet*

the standard 3/4" outlet grille frame should be used. The outer edge of this frame and the outer edge of the inlet opening frame are used as plaster grounds.

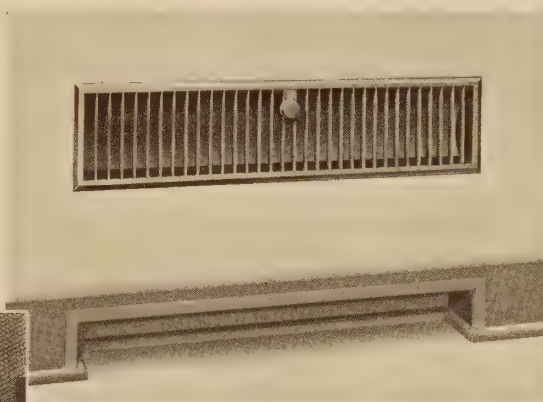
If tile or other thick wall finishes are used, special depth outlet grille frames should be ordered so that the outer edge of the frame will be flush with the finished wall as explained on pages 12 and 30.

### *Plastering and Finishing*

The next operation is to apply the plaster and install the floor and trim. As explained

above, when a plaster wall finish is used both the outlet grille frame and the inlet opening frame act as plaster grounds. When thicker finishes are used deeper outlet grille frames should be ordered. Special inlet frames are not required.

The finished floor is run to the back of the inlet opening and the quarter round only is run



*The finished installation  
Sides and back of inlet are formed by the steel cabinet  
painted to match base board*

on the sides and back of the inlet opening as shown on pages 20 to 25 and 30. The sides and back of the inlet opening are formed by the inside of the steel cabinet which may be painted to match the base board by the decorating contractor. See page 30. It is unwise to line the sides of the inlet opening with wood, tile or other trim because by doing so some of the heating element will be blocked off and the capacity will be decreased proportionally.

### *Installing the Grille*

The last operation, after the installation and plastering is otherwise completed, is to remove the steel shield in the outlet opening and install the grille and damper assembly. The grille is held in place by means of hardened steel points in the top frame and set screws in the lower frame. The grilles should not be unpacked until needed.

*Do not have heat in the radiator until plaster is thoroughly dry or cracking of plaster may develop.*

The “Immured” type Invisible Radiator is now completely installed behind the plastered wall for the life of the building, where it will never require attention or repair.



## INSTALLATION OF THE—

### *The Recess*

The first step is to provide the proper size recess as shown in the illustration below.

By referring to the table of dimensions on pages 26-29 for the radiator to be installed, it will be found that the overall length of the cabinet in inches is equal to  $L+14-1/2''$ . In



*The recess. Note that sleepers have been run into recess*

sizing the recess a clearance of  $1/2''$  to  $1''$  should be allowed at each end.

The minimum height of the recess is  $H$  plus  $1/2''$  to  $1''$  for clearance.

*The minimum depth is measured from the finished wall line and is equal to the listed depth of the radiator minus  $3/4''$ . See pages 26-29.*

The sleepers or rough floor should be run into the recess as shown. A nailing strip should be provided across the top of the recess and a nailing surface under the cabinet as shown on pages 26 to 29 and 31. If a plate is used it should be omitted in the recess.

### *Setting the Cabinet*

The second step is to set the cabinet in the recess and nail it securely in place through the nail holes provided in the nailing angle along the top and through the bottom of the cabinet.

The adjustable nailing angle on the top of the cabinet should be adjusted so that the outside edge of the cabinet will be flush with the finished wall. See page 31. In the case of a

plastered wall the outside edges of the cabinet form a plaster ground.

The adjustable angle on the sides should be adjusted to line up with the nailing angle on top. After these three angles have been adjusted they should be fastened in place by tightening the adjustable nuts.

Care should be taken to see that the cabinet is installed in a level position or pitching slightly toward the end on which the return connection will be made in order that the heating element will drain properly.

The cabinet should usually be set on the rough floor and as close to the finished floor as possible. The bottom of the cabinet should be not less than  $1/4''$  or not more than  $1-1/2''$  below the top of the finished floor in order that the base section may be adjusted to fit snugly on the finished floor.



*The cabinet nailed in place at top and bottom.  
Heating element removed*

### *The Piping*

The valves and traps should be installed directly on the radiator. See piping suggestions on pages 38 to 41.

The heating element is regularly furnished with a coupling for a  $3/4''$  female thread at the supply end and a coupling for a  $1/2''$  eccentric female thread at the return end. See pages 26-29 for roughing dimensions.

For a one or two pipe gravity system these couplings usually should not be used. These couplings are not furnished when the radiators are ordered for hot water installation, but an air vent tapping is provided at the bottom of the

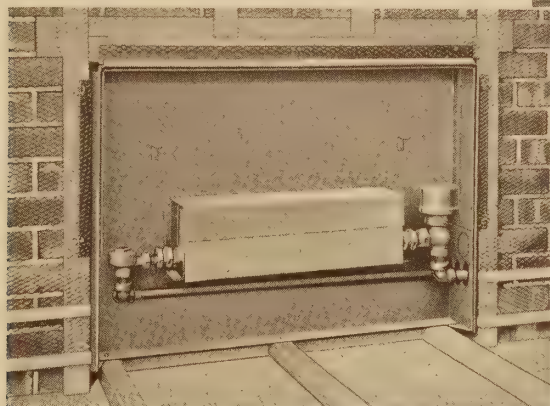
## “PANELED” TYPE

heating element as explained on page 15. A 1/8" hand operated air valve should be installed in this connection by the heating contractor. When the couplings are not used the piping should be connected directly to the 1" male connections on the heating element.

The shield covering the heating element should not be removed until the plaster is applied and the entire installation is otherwise completed as it is a protection against plaster and other debris.

### *Lathing*

Holes are provided in the side adjustable angles for tying the metal lath solidly to the cabinet as shown on page 31. Additional holes are provided in the end of the cabinet near the floor for securely fastening the metal lath. Holes are also provided for lath ties in the back



*Heating element and piping installed. Metal lath wired in place and ready for plastering*

of the cabinet for use when it is installed in a partition that is plastered on both sides.

### *Plastering and Finishing*

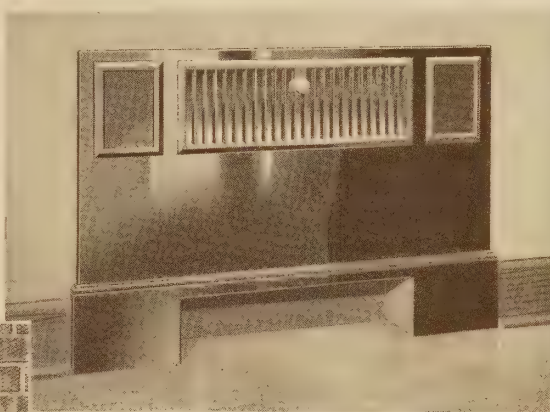
The next step is to apply the plaster or other wall finish and to install the finished floor and trim. It should be noted that the turned over edge of the cabinet acts as a plaster ground. See page 31.

The finished floor is run into the inlet opening. *It is essential that the finished floor in the inlet opening be level in order that the base of the panel will not bind.* The back of the inlet opening is formed by the back of the steel cabinet while the sides are steel extensions

from the base section of the panel. These steel parts may be painted any desired color by the decorating contractor.

### *Fitting the Panel*

The panel should then be fitted to meet the conditions of the individual radiator before the base board is installed. See page 32. The



*The complete installation with steel back and sides of inlet opening painted to match panel*

simplest way is to loosen the adjusting nuts on the back of the panel and to pull up the base section as far as it will go. Then slip the tongue on the panel into the groove in the cabinet and push the panel in place. The base section should then be pushed down until it fits snugly but not too tightly against the floor and the position marked on the face of the panel. The entire panel can then be removed and the adjusting nuts tightened to maintain this adjustment. The method of tightening these nuts is shown on page 12.

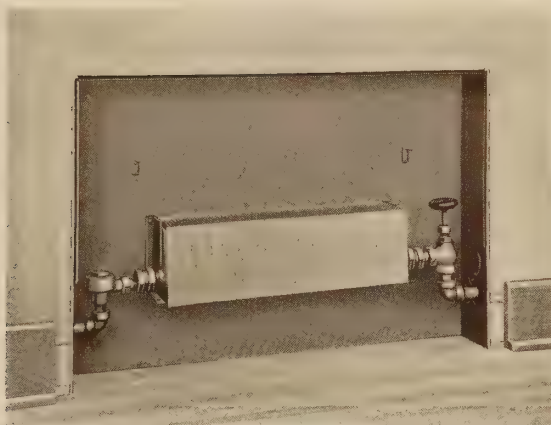
It is suggested that the base board be run to 1/8" from the panel as shown on pages 31 and 32. If a wood base section is required across the panel it may be installed as explained on pages 13 and 32.

When heat is wanted the shield over the heating element should be removed and the panel slipped in place and fastened to the cabinet by the spring hooks on the back of the panel. These hooks can be easily reached through the hand access doors as shown on page 9.

If heat is not required it is suggested that the panel be stored in a safe place until it is to be decorated.



## Method of Installing Piping for the "Paneled" Type



*Supply and return at opposite ends and above the floor.  
One knockout has been used at each end*

**D**UE to the ample piping space provided in the ends of the cabinet and to the knockouts provided in each end, "Paneled" type Invisible Radiators can be piped in practically every conceivable way.

### *Opposite End Connections*

If the connections come from opposite ends and are above the floor, the piping can be installed, as shown in the illustration, by simply removing one knockout at each end. These knockouts are amply proportioned for any piping that may be installed and are properly located so that the piping may be run at the same level as the radiator connection or at a lower level as shown.

### *Connections from Below*

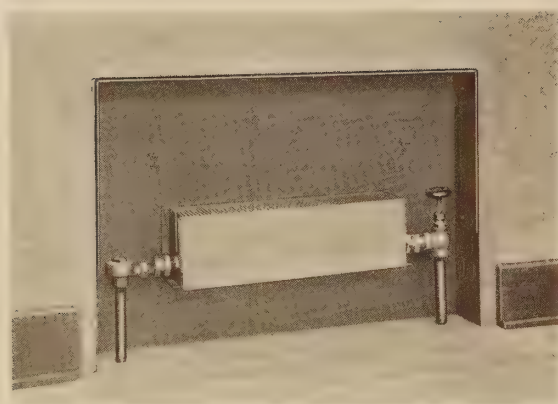
Naturally, the installation is more simple when the connections come from immediately below the radiator as shown in the lower illustration. Connections of this type are very easily made because the bottom of the cabinet is open and does not interfere with the piping in any way.

### *Connections on the Same End*

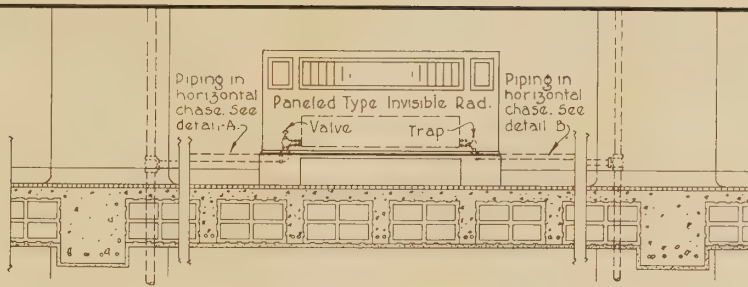
If the connections both come from the same end and are above the floor, the return branch from the far end of the radiator should be installed under the radiator and as high as possible, as shown on the previous page. The top of the air inlet opening in the panel extends below the heating element and effectively conceals this return piping connection from view.

### *Piping Is Easily Concealed*

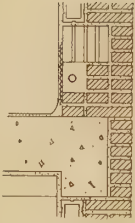
The piping from the risers to the "Paneled" type radiator may be concealed in a number of ways. Two general suggestions are offered on the opposite page. Many other methods are sure to suggest themselves for any type of construction.



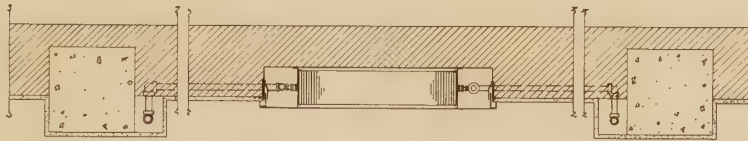
*Supply and return at opposite  
ends from below*



• ELEVATION •



• DETAIL A •  
• CROSS SECTION •  
• SHOWING SUGGESTED •  
• ALL MASONRY •  
• CONSTRUCTION •

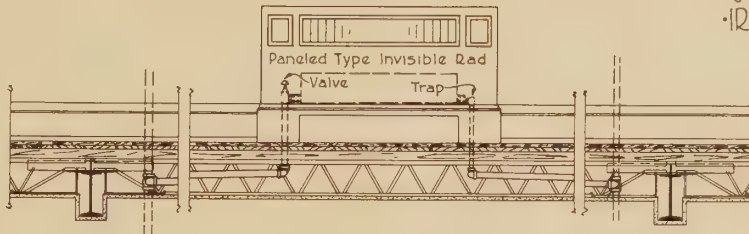


• PLAN •

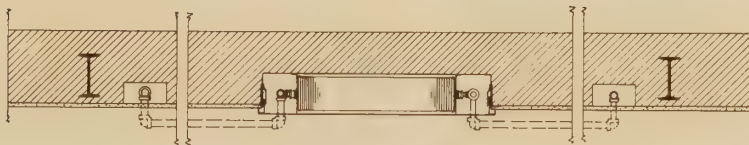
• SUGGESTED METHOD OF CONCEALING •  
• PIPING WHERE CONCRETE JOIST CON- •  
• STRUCTION IS USED •



• DETAIL B •  
• CROSS SECTION •  
• SHOWING SUGGESTED •  
• ED CONSTRUCTION •  
• USING A CHANNEL •  
• IRON FOR SUPPORT •



• ELEVATION •

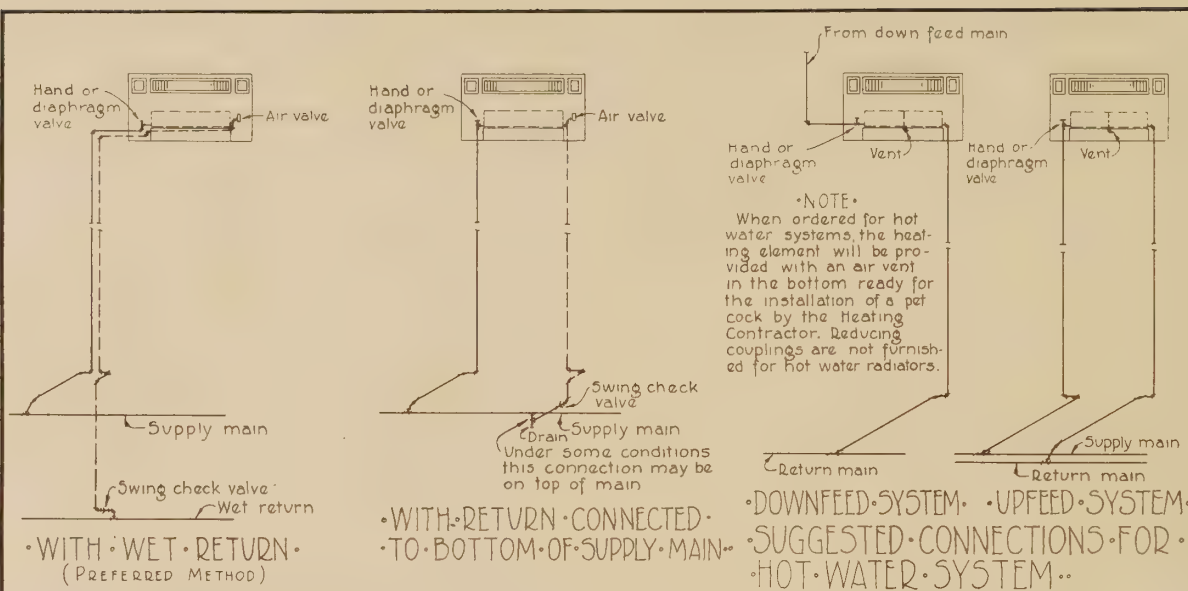


• PLAN •

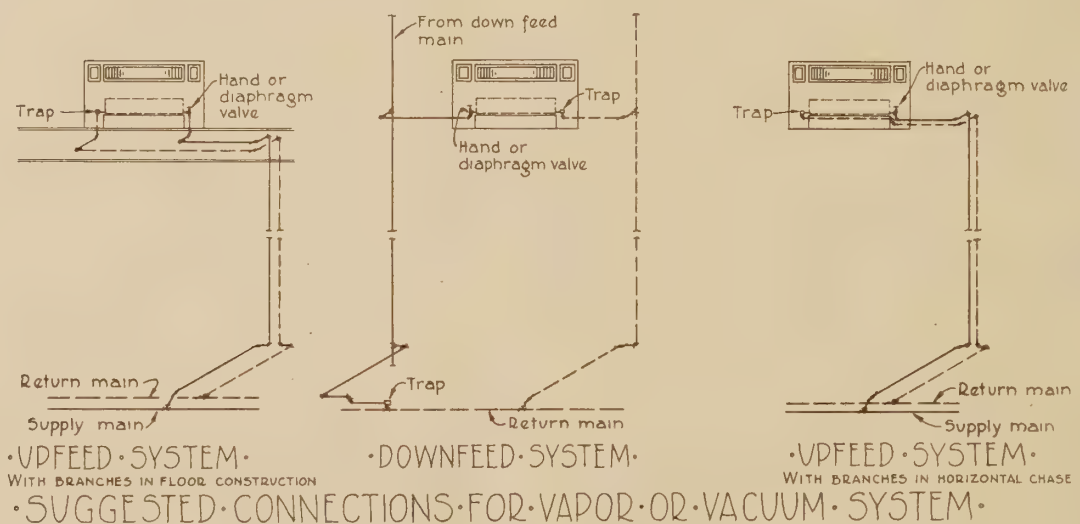
• SUGGESTED METHOD OF CONCEALING PIPING •  
• WHERE OPEN JOIST CONSTRUCTION IS USED •

• SUGGESTIONS FOR CONCEALING PIPING •  
• PANELED TYPE •





•SUGGESTED CONNECTIONS FOR ONE PIPE STEAM SYSTEM•  
With a one pipe steam system do not use the reducing couplings furnished



•NOTE•  
Connections are shown for second floor radiators. First floor radiators are connected in the same way. Unless radiators are ordered for a hot water system, a  $\frac{3}{4}$ "x1" coupling for use on the supply end and a  $\frac{1}{2}$ "x1" eccentric coupling for use on the return end are furnished. The eccentric coupling on the return end should be installed with the outlet at the bottom. Ordinary fittings may be used for one pipe steam and hot water systems

# •PIPING SUGGESTIONS• •PANELED TYPE•

## Piping Suggestions for "Paneled" Type

*(See opposite page)*

In general, "Paneled" Type Invisible Radiators are piped in exactly the same way as direct radiators because any traps or valves that may be required are installed directly on the heating element. There are, however, a few exceptions as will be explained later.

A 1" male piping connection is provided at each end of the heating element. These sizes are ample for any type of vapor, vacuum or hot water system.

### *Gravity Systems*

However, in the case of one-pipe gravity systems, the 1" connections are not ordinarily large enough for one-pipe connections except for the smaller sizes. Therefore, it is essential in most cases, that two-pipe connections be used for the "Paneled" type, even though other radiators on the same job may be connected as one-pipe radiators. Two general methods of making two-pipe connections to a one-pipe system are shown on top of the opposite page.

In most cases, the best location for the air valve is in top of the tee on the return end as shown. In all cases, it is essential that the air valve be placed high enough above the boiler waterline so that it will not become water logged.

Usually the reducing couplings furnished with the radiator should not be used with gravity steam systems.

### *Hot Water Systems*

Radiators for hot water systems should be ordered specially for this service. When ordered for hot water systems the couplings mentioned above are omitted and an air vent tapping is placed in the bottom of the heating element. This consists of a small internal pipe extending to the top of the core. A 1/8" brass elbow is provided at the bottom of this vent

into which a 1/8" hand operated air valve should be installed by the heating contractor for the purpose of venting the air from the top of the core. This air valve can be easily reached through the air inlet opening at the bottom of the cabinet.

When ordinary radiators are used on a down-feed hot water system it is customary to connect the flow pipe to the top of the radiator in such a way that any air that may accumulate in the radiator will work its way up the flow riser and can then be removed from the system at a central point. With the Herman Nelson Wedge Core Heating Element, which is used for both types of Invisible Radiators, this is not possible because the connections are always made at the bottom. For this reason the air vent as shown on page 15 must be used on all types of hot water systems and the heating element will be equipped in this way when ordered for any hot water system.

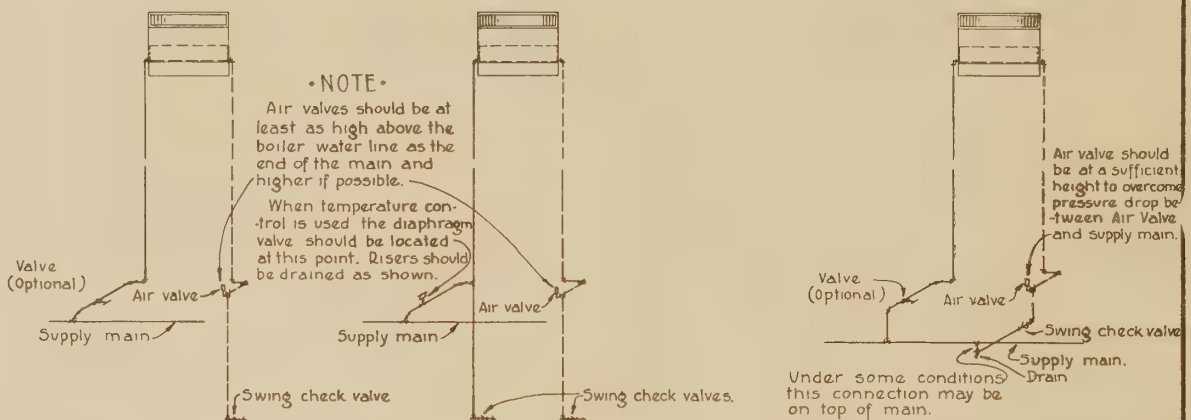
### *Vapor and Vacuum Systems*

For vapor and vacuum systems, "Paneled" type Invisible Radiators may be piped in exactly the same way as used for exposed radiators. Any valves that may be required should be installed directly on the heating element. A 3/4" reducing coupling for use on the supply end and a 1/2" eccentric reducing coupling for use on the return end are furnished as standard equipment.

The outlet of the eccentric reducing coupling on the return end should be at the bottom in order that the water will drain freely from the heating element at all times.

As previously explained, the piping may enter the radiator cabinet in almost any manner. The diagrams on the opposite page illustrate some of the many possibilities for piping the "Paneled" type Invisible Radiator.

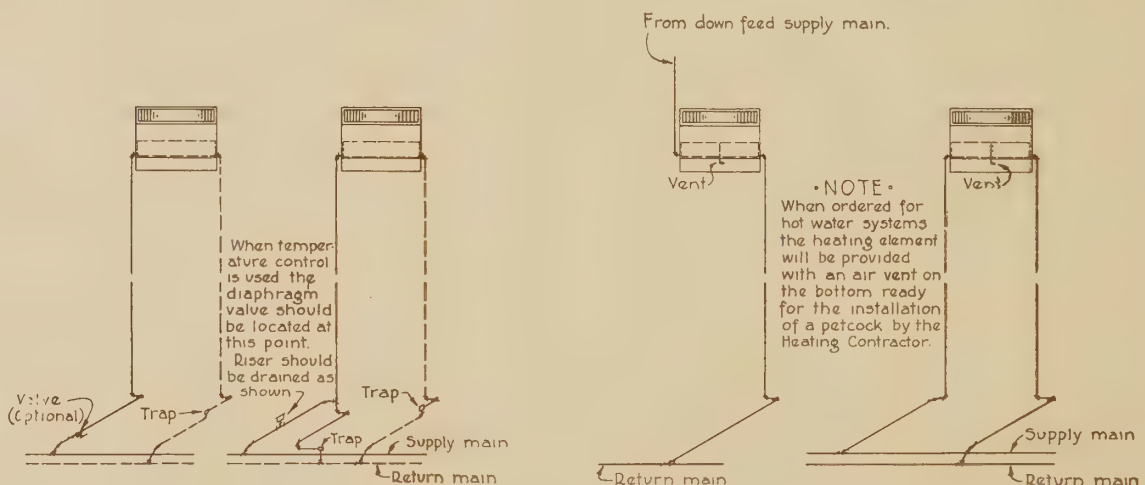




• SYSTEM WITH WET RETURN •  
(PREFERRED METHOD)

• SYSTEM WITH RETURN CONNECTIONS TO BOTTOM OF SUPPLY MAIN •

• SUGGESTED CONNECTIONS FOR ONE PIPE STEAM SYSTEMS •



• SUGGESTED CONNECTIONS FOR VAPOR OR VACUUM SYSTEMS •

• DOWNFEED SYSTEM •  
• UPFEED SYSTEM •  
• SUGGESTED CONNECTIONS FOR HOT WATER SYSTEMS •

• NOTE •

Connections are shown for second floor radiators. First floor radiators are connected in the same way.

• PIPING SUGGESTIONS •  
• IMMURED TYPE •

## Piping Suggestions for "Immured" Type

(See opposite page)

In general, the piping required for "Immured" type Invisible Radiators does not differ from any other type of radiator except that it is not practical to install traps, valves or union connections directly on the heating element because they would not be accessible. See page 2.

In order to avoid using concealed union connections it is desirable to first set the radiator in place and to run the piping from the heating element to the main piping. Hand valves are not usually required with "Immured" type radiators because the temperature control is accomplished by operation of the outlet damper. However, where cut-off valves are required they should be located as explained below.

As explained on page 41 the Herman Nelson Wedge Core Heating Element, is provided with 1" male pipe connections at each end. On the "Immured" type these male connections extend through the cabinet, making it unnecessary to remove the heating element from the cabinet at any time.

### *Gravity Steam Systems*

As in the case of the "Paneled" type, whenever the "Immured" type Invisible Radiator is used on a gravity system, it should be connected as a two-pipe radiator even though other radiators on the same job are connected as one-pipe radiators. This is necessary, because the 1" connections are not usually large enough for one-pipe connections and because the air valve should be installed in an accessible position.

Two general suggestions to meet these conditions are shown on the opposite page. In general, all air valves should be placed high enough above the boiler waterline that they will not become water logged.

### *Hot Water Systems*

Radiators for hot water systems should be specially ordered for this service. As previously

explained an internal hot water vent tapping is provided in the bottom of the heating element in order to remove the air from the top of the core. A small brass elbow is provided on this vent tapping into which a 1/8" hand operated air valve should be installed by the heating contractor. This air vent tapping is so located that it can be easily operated thru the air inlet opening at the floor.

As in the case of the "Paneled" type Invisible Radiator this vent tapping should be used for down-feed hot water systems as well as for up-feed systems.

### *Vapor and Vacuum Systems*

All traps and valves should be installed where they will be readily accessible. In order to accomplish this in the case of the "Immured" type, it is necessary to place the traps and valves, when used, in the basement or below the floor on which the radiator is installed.

The valves are optional in most cases because the actual control of the temperature is obtained by the operation of the outlet damper. However, they may be desired for cut-off purposes.

It is usually necessary to install two connections from the radiator to the basement, or to some other place, where the traps and valves can be installed in some accessible place. It is not generally advisable to connect more than one radiator to one trap. However, the engineer or manufacturer of the system used should be consulted on this point.

### *Temperature Control Valves*

When "Immured" type radiators are thermostatically controlled it is also necessary to install the diaphragm valves in the basement or below the floor on which the radiator is installed. In this event it is highly desirable to drain the riser beyond the diaphragm valve, in order that pounding will not occur when the valve opens.

Suggested methods of draining the riser are shown on the opposite page for gravity, and vapor or vacuum systems.



## Suggested Form of Specifications for the "IMMURED" TYPE Invisible Radiator

**THE** heating contractor shall furnish and install, where indicated on plans, or schedule accompanying same, or as directed by the architect, Herman Nelson Invisible Radiators of the "Immured" type, as per the following specifications.

**Factory Built Units**—All Invisible Radiators shall be furnished as complete units by the manufacturers thereof, including leak-proof heating elements, steel cabinets, dampers and grilles as selected by the architect, all as shown and described in the manufacturer's latest catalog. Manufacturers to guarantee capacities to be in accordance with their published ratings.

**Installation**—These radiators shall be installed by the heating contractor in accordance with manufacturers printed instructions accompanying same and with proper reference to the wall recesses and wall finish in their respective locations, as shown on plans. Cabinets shall be so set that the bottom of same will not be more than 3/4" below the top of the finished floor and outlet grille frames are flush with the finished wall.

**Recesses**—The general contractor will provide the necessary recesses or wall pockets with nailing strips or surfaces at top and bottom as required. The heating contractor shall furnish the general contractor with correct information as to the size and location of all radiator recesses, clearances, and such other information as will enable him to correctly extend the wall finish across the front of the cabinet.

**Cabinets**—All cabinets shall be substantially built, by the manufacturer, of 16-gauge steel, neatly fabricated and braced. They shall be provided with nailing flanges at top and nail holes in the bottom. Outlet openings shall be provided with heavy welded angle iron frames riveted to cabinets and arranged to act as plaster grounds. In rooms where the wall finish is more than 3/4" thick, proper depth angle iron frames for warm air outlet grilles shall be ordered from the manufacturers in order that these frames will extend to the finished wall line.

Front and rear of cabinets shall be provided with galvanized annealed iron wire ties for attaching metal lath. A wood nailing strip shall be provided immediately above the air inlet opening at the base of the cabinet and extending the full length of this opening.

A temporary removable steel shield shall be provided in the grille opening to protect the heating element from plaster and other debris during installation. This shield shall not be removed until the installation is completed and the grille is to be installed.

**Painting**—The entire cabinet shall be thoroughly painted by the manufacturer, immediately after fabrication and before shipping. Grilles

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**HERMAN - NELSON - - - INVISIBLE - RADIATORS - - -**

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and dampers shall be finished with one priming coat after fabrication and before shipping, and will be decorated by other contractors to match room decorations. Intake openings shall be painted by others as directed.

**Heating Element**—The heating element shall be the leak-proof Herman Nelson Wedge Core Radiator without joints of any kind. The steam or water container shall be a solid one piece aluminum alloy casting. The extended surface shall be in the form of smooth straight aluminum fins securely wedged to the core to afford a tight metal to metal contact without the use of solder. The plates or fins shall be spaced sufficiently far apart to prevent stoppage by the accumulation of lint and dirt and arranged to form straight, smooth, vertical air passages. The assembled sections shall be tested and proved tight under a hydrostatic pressure of not less than 300 lbs. per square inch and shall be guaranteed for a working pressure of 150 lbs. per square inch.

Where hot water is used for heating, this contractor shall install hand operated air valves in the vent tappings in the heating element. Air vents shall be arranged to be operated thru the opening at the base of the cabinet.

**Grilles and Dampers**—All outlet grilles shall be cast of the designs listed in the schedule or as shown on the plans. Design names refer to illustrations in manufacturer's catalog. A light weight single piece damper shall be provided behind all grilles, with operating mechanism for the operation of dampers. The damper and operating mechanism shall be attached directly to the grille so that the entire assembly may be removed as one piece. The mechanism shall be so arranged that the damper may be held in any position from full open to tightly closed without danger of becoming dislodged.

**Alternate Proposals**—The contractor shall submit bid on the materials herein specified in order to qualify as a bidder. Alternate proposals on other makes of radiators, as approved by architects, in writing, will be considered. However, alternate proposals shall state the deduction or addition to be made in case of substitution and shall be filed with base bid, clearly made out on a separate form and accompanied by complete alternate schedule, specifications, literature and other essential data.

**SCHEDULE OF IMMURED TYPE INVISIBLE RADIATORS**

| Room Name or Number | Floor Name or Number | Type of Invisible Radiator | Number of Invisible Radiators of same size | Capacity of each Invisible Radiator (in sq. ft.) | Catalog Number of Invisible Radiators | Catalog Name of Grille | With or Without Control Damper | Depth of Outlet Frame (in inches) | Overall Size of Recess<br>(in inches) |        |                  |
|---------------------|----------------------|----------------------------|--|--|---------------------------------------|------------------------|--------------------------------|-----------------------------------|---------------------------------------|--------|------------------|
|                     |                      |                            |  |  |                                       |                        |                                |                                   | Length                                | Height | Depth            |
| Living Room         | First                | Immured                    | 2  | 32.2   | 3022-C                                | Bud                    | With                           | $\frac{3}{4}$ "                   | 39"                                   | 25"    | $4\frac{7}{8}$ " |
| Bath                | Second               | Immured                    | 1  | 22.8   | 1533-C                                | Standard               | With                           | 1 $\frac{1}{2}$ " (tile finish)   | 24"                                   | 31"    | $7\frac{1}{2}$ " |



## Suggested Form of Specifications for the "PANELED" TYPE Invisible Radiator

**THE** heating contractor shall furnish and install, where indicated on plans, or schedule accompanying same, or as directed by the architect, Herman Nelson Invisible Radiators, of the "Paneled" type, as per the following specifications:

**Factory Built Units**—All Invisible Radiators shall be furnished as complete units by the manufacturers thereof, including leak-proof heating elements, steel cabinets, adjustable angles, removable panels, adjustable bases, dampers, and grilles as selected by the architect, all accessories as shown and described in the manufacturer's latest catalog.

**Installation**—These radiators shall be installed by the heating contractor, in accordance with manufacturer's printed instructions accompanying same with the bottom of the cabinet as near the finished floor line as possible but not closer than  $1/4''$  nor farther than  $1-1/2''$ , and with proper reference to the wall recesses and wall finish in their respective locations, as shown on plans.

**Recesses**—The general contractor will provide the necessary recesses or wall pockets, with nailing strips or surfaces at top and bottom, as required. The heating contractor shall furnish the general contractor with correct information as to the size, clearances, and location of all radiator recesses and such other information as will enable him to make proper provisions for the installation of the radiators.

**Cabinets**—All cabinets shall be substantially built by the manufacturers, of number 16 gauge steel, neatly fabricated and braced. They shall be provided with adjustable nailing flanges at tops and sides with necessary holes for nailing cabinet in place and tying metal lath.

**Removable Fronts**—All cabinets shall be provided with front panels, having a tongue and grooved joint, which may be instantly removed or replaced without the use of tools of any kind. They shall be provided with spring hooks for quickly fastening to the cabinet to hold them securely in place. Self closing hand access doors shall be provided in cabinet fronts for access to radiator controlling valves.

**Adjustable Bases**—Front panels shall be furnished with steel bases that may be adjusted up or down to meet the varying finished floor levels. Sufficient adjustment shall be provided to permit the distance from the bottom of the cabinet to the finished floor to vary from  $1/4''$  to  $1-1/2''$ . After plastering is complete and finished floors are laid, the contractor shall so adjust these bases and fit them in place that the panel may be easily slipped out to provide immediate access to the valves, traps and other connections.

**Painting**—The cabinet shall be thoroughly painted by the manufacturer, immediately after fabrication. The front panel shall be painted with one coat of priming paint immediately after fabrication and before shipping. It will be finished to match room finish by other contractors. Grilles and

## HERMAN - NELSON - - - INVISIBLE - RADIATORS - - -

dampers shall be furnished with one priming coat after fabrication and before shipping, and will be decorated by other contractors to match room decorations.

**Heating Element**—The heating element shall be the leak-proof Herman Nelson Wedge Core Radiator without joints of any kind. The steam or water container shall be a solid one piece aluminum alloy casting. The extended surface shall be in the form of smooth straight aluminum fins securely wedged to the core to afford a tight metal to metal contact without the use of solder. The plates or fins shall be spaced sufficiently far apart to prevent stoppage by the accumulation of lint and dirt and arranged to form straight, smooth, vertical air passages. The assembled sections shall be tested and proved tight under a hydrostatic pressure of not less than 300 lbs. per square inch and shall be guaranteed for a working pressure of 150 lbs. per square inch.

Where hot water is used for heating, this contractor shall install hand operated air valves in the vent tappings in the heating element. Air vents shall be arranged to be operated thru the opening at the base of the cabinet.

A temporary removable steel shield shall be provided over the heating element to protect it from plaster and other debris during installation. This shield shall not be removed by the contractor until the installation is completed including plastering, and the front panel is to be installed.

**Grilles and Dampers**—All outlet grilles shall be cast of the designs listed in the schedule or as shown on the plans. Design names refer to illustrations in manufacturer's catalog. A light weight single piece damper shall be provided behind all grilles, with operating mechanism for the operation of dampers. The damper and operating mechanism shall be attached directly to the grille so that the entire assembly may be removed as one piece. The mechanism shall be so arranged that the damper may be held in any position from full open to tightly closed without danger of becoming dislodged.

**Alternate Proposals**—The contractor shall submit bid on the materials herein specified in order to qualify as a bidder. Alternate proposals on other makes of radiators, as approved by architects, in writing, will be considered. However, alternate proposals shall state the deduction or addition to be made in case of substitution and shall be filed with base bid, clearly made out on a separate form and accompanied by complete alternate schedule, specifications, literature and other essential data.

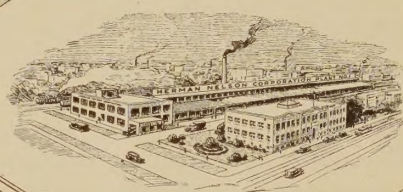
### SCHEDULE OF "PANELED" TYPE INVISIBLE RADIATORS

| Room Name or Number | Floor Name or Number | Type of Invisible Radiator | Number of Invisible Radiators of same size | Capacity of each Invisible Radiator (in sq. ft.) | Catalog Number of Invisible Radiators | Catalog Name of Grille | With or Without Control Damper | Type of Base | Overall Size of Recess<br>(in inches) |        |        |
|---------------------|----------------------|----------------------------|--|--|---------------------------------------|------------------------|--------------------------------|--------------|---------------------------------------|--------|--------|
|                     |                      |                            |  |  |                                       |                        |                                |              | Length                                | Height | Depth  |
| Office No. 1        | Mezzanine            | Paneled                    | 3  | 20.6   | 2011-D                                | Floral                 | With                           | Wood         | 36"                                   | 21"    | 4 3/4" |
| Lobby               | Main                 | Paneled                    | 2  | 70.5   | 5032-D                                | Standard               | Without                        | Standard     | 66"                                   | 31"    | 6 3/4" |



# Guarantee

Like all other Herman Nelson Corporation products, Herman Nelson Invisible Radiators are guaranteed without reservation against defects in material or construction. If it should develop at any time that a defective radiator has been furnished a new one will be installed without cost to the purchaser.



The Herman Nelson Corporation is constantly striving to improve its products in order that they may better serve the ultimate user. For this reason this company reserves the right to make any improvements or changes, deemed advisable, without notice. It is therefore important to have on file the latest catalog. This is the January 1st, 1930, Edition.

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